

**641—40.117(136C) Employee protection.**

**40.117(1)** Discrimination by a licensee or registrant, an applicant for a license or registration, or a contractor or subcontractor of a licensee or applicant against an employee for engaging in certain protected activities is prohibited. Discrimination includes discharge and other actions that relate to compensation, terms, conditions, or privileges of employment. The protected activities are established in 641—Chapters 38 to 45 and in general are related to the administration or enforcement of requirements imposed under 641—Chapters 38 to 45.

a. The protected activities include but are not limited to:

(1) Providing the agency or the individual's employer information about alleged violations of either of the statutes named in this rule or possible violations of requirements imposed under either of those statutes;

(2) Refusing to engage in any practice made unlawful under either of the statutes named in this rule or under these requirements if the employee has identified the alleged illegality to the employer;

(3) Requesting that the agency institute action against the individual's employer for the administration or enforcement of these requirements;

(4) Testifying in any agency proceeding, or before Congress, or at any federal or state proceeding regarding any provision (or proposed provision) of federal statutes or these rules;

(5) Assisting or participating in, or about to assist or participate in, these activities.

b. These activities are protected even if no formal proceeding is actually initiated as a result of the employee's assistance or participation.

c. This rule has no application to any employee alleging discrimination prohibited by this rule who, acting without direction from the individual's employer (or the employer's agent), deliberately causes a violation of any requirement of 641—Chapters 38 to 45.

**40.117(2)** Any employee who believes that the employee has been discharged or otherwise discriminated against by any person for engaging in protected activities specified in 40.117(1)"a" may seek a remedy for the discharge or discrimination through an administrative proceeding in the U.S. Department of Labor. The administrative proceeding must be initiated within 180 days after an alleged violation occurs. The employee may file for the administrative proceeding by filing a complaint alleging the violation with the Department of Labor, Employment Standards Administration, Wage and Hour Division. The Department of Labor may order reinstatement, back pay, and compensatory damages.

**40.117(3)** A violation of 40.117(1)"a"(1) or 40.117(1)"a"(4) by a licensee or registrant, an applicant for a license or registration, or a contractor or subcontractor of a licensee or applicant may be grounds for:

a. Denial, revocation, or suspension of the license or registration.

b. Imposition of a civil penalty on the licensee, registrant, or applicant.

c. Other enforcement action.

**40.117(4)** Actions taken by an employer or others which adversely affect an employee may be predicated upon nondiscriminatory grounds. The prohibition applies when the adverse action occurs because the employee has engaged in protected activities. An employee's engagement in protected activities does not automatically render the employee immune from discharge or discipline for legitimate reasons or from adverse action dictated by nonprohibited considerations.

**40.117(5)** No agreement affecting the compensation, terms, conditions, or privileges of employment, including an agreement to settle a complaint filed by an employee with the Department of Labor pursuant to 641—Chapters 38 to 45, may contain any provision which would prohibit, restrict, or otherwise discourage an employee from participating in protected activity as defined in 40.117(1)"a" including, but not limited to, providing information to the agency or to the individual's employer on potential violations or other matters within the agency's regulatory responsibilities.

**CHAPTER 40**  
**APPENDIX A**  
**PROTECTION FACTORS FOR RESPIRATORS<sup>a</sup>**

	Operating Mode	Assigned Protection Factor
I. Air-Purifying Respirators (particulate 1A <sup>b</sup> only) 1A <sup>c</sup> :		
Filtering facepiece disposable <sup>d</sup>	Negative Pressure	( <sup>d</sup> )
Facepiece, half <sup>e</sup>	Negative Pressure	10
Facepiece, full	Negative Pressure	100
Facepiece, half	Powered air-purifying respirators	50
Facepiece, full	Powered air-purifying respirators	1000
Helmet/hood	Powered air-purifying respirators	1000
Facepiece, loose-fitting	Powered air-purifying respirators	25
II. Atmosphere-Supplying Respirators (particulate, gases and vapors 1A <sup>f</sup> ):		
1. Air-line respirator:		
Facepiece, half	Demand	10
Facepiece, half	Continuous Flow	50
Facepiece, half	Pressure Demand	50
Facepiece, full	Demand	100
Facepiece, full	Continuous Flow	1000
Facepiece, full	Pressure Demand	1000
Helmet/hood	Continuous Flow	1000
Facepiece, loose-fitting	Continuous Flow	25
Suit	Continuous Flow	( <sup>g</sup> )
2. Self-contained breathing apparatus (SCBA):		
Facepiece, full	Demand	<sup>h</sup> 100
Facepiece, full	Pressure Demand	<sup>i</sup> 10,000
Facepiece, full	Demand, Recirculating	<sup>h</sup> 100
Facepiece, full	Positive Pressure Recirculating	<sup>i</sup> 10,000
III. Combination Respirators:		
Any combination of air-purifying and atmosphere-supplying respirators	(1) Assigned protection factor for type and mode of operation as listed above	

<sup>a</sup>These assigned protection factors apply only in a respiratory protection program that meets the requirement of 641—Chapter 40. They are applicable only to airborne radiological hazards and may not be appropriate to circumstances when chemical or other respiratory hazards exist instead of, or in addition to, radioactive hazards. Selection and use of respirators for such circumstances must also comply with Department of Labor regulations.

Radioactive contaminants for which the concentration values in Table I, Column 3, of Appendix B to 641—Chapter 40 are based on internal dose due to inhalation may, in addition, present external exposure hazards at higher concentrations. Under these circumstances, limitations on occupancy may have to be governed by external dose limits.

<sup>b</sup>Air-purifying respirators with APF<100 must be equipped with particulate filters that are at least 95 percent efficient. Air-purifying respirators with APF=100 must be equipped with particulate filters that are at least 99 percent efficient. Air-purifying respirators with APF>100 must be equipped with particulate filters that are at least 99.97 percent efficient.

<sup>c</sup>The licensee may apply to the agency for the use of an APF greater than 1 for sorbent cartridges as protection against airborne radioactive gases and vapors (e.g., radioiodine).

<sup>d</sup>Licensees may permit individuals to use this type of respirator who have not been medically screened or fit tested on the device provided that no credit be taken for the use in estimating intake or dose. It is also recognized that it is difficult to perform an effective positive or negative pressure pre-use user seal check on this type of device. All other respiratory protection program requirements listed in 641—40.50(136C) apply. An assigned protection factor has not been assigned for these devices. However, an APF equal to 10 may be used if the licensee can demonstrate a fit factor of at least 100 by use of a validated or evaluated, qualitative or quantitative fit test.

<sup>e</sup>Under-chin type only. No distinction is made in this Appendix between elastomeric half-masks with replaceable cartridges and those designed with the filter medium as an integral part of the face-piece (e.g., disposable or reusable disposable). Both types are acceptable so long as the seal area of the latter contains some substantial type of seal-enhancing material such as rubber or plastic, the two or more suspension straps are adjustable, the filter medium is at least 95 percent efficient, and all other requirements of 641—Chapter 40 are met.

<sup>f</sup>The assigned protection factors for gases and vapors are not applicable to radioactive contaminants that present an absorption or submersion hazard. For tritium oxide vapor, approximately one-third of the intake occurs by absorption through the skin so that an overall protection factor of 3 is appropriate when atmosphere-supplying respirators are used to protect against tritium oxide. Exposure to radioactive noble gases is not considered a significant respiratory hazard, and protective actions for these contaminants should be based on external (submersion) dose considerations.

<sup>g</sup>No NIOSH approval schedule is currently available for atmosphere-supplying suits. This equipment may be used in an acceptable respiratory protection program as long as all the other minimum program requirements, with the exception of fit testing, are met.

<sup>h</sup>The licensee should implement institutional controls to ensure that these devices are not used in areas immediately dangerous to life or health.

<sup>i</sup>This type of respirator may be used as an emergency device in unknown concentrations for protection against inhalation hazards. External radiation hazards and other limitations to permitted exposure such as skin absorption shall be taken into account in these circumstances. This device may not be used by any individual who experiences perceptible outward leakage of breathing gas while wearing the device.

**CHAPTER 40**  
**APPENDIX B**

**ANNUAL LIMITS ON INTAKE (ALI) AND DERIVED AIR CONCENTRATIONS  
(DAC) OF RADIONUCLIDES FOR OCCUPATIONAL EXPOSURE; EFFLUENT  
CONCENTRATIONS; CONCENTRATIONS FOR RELEASE TO SANITARY SEWERAGE**

#### Introduction

For each radionuclide, Table I indicates the chemical form which is to be used for selecting the appropriate ALI or DAC value. The ALIs and DACs for inhalation are given for an aerosol with an activity median aerodynamic diameter (AMAD) of 1  $\mu\text{m}$ , micron, and for three classes (D,W,Y) of radioactive material, which refer to their retention (approximately days, weeks or years) in the pulmonary region of the lung. This classification applies to a range of clearance half-times for D if less than 10 days, for W from 10 to 100 days, and for Y greater than 100 days. Table II provides concentration limits for airborne and liquid effluents released to the general environment. Table III provides concentration limits for discharges to sanitary sewerage.

Note: The values in Tables I, II, and III are presented in the computer "E" notation. In this notation a value of 6E-02 represents a value of  $6 \times 10^{-2}$  or 0.06, 6E+2 represents  $6 \times 10^2$  or 600, and 6E+0 represents  $6 \times 10^0$  or 6.

**TABLE I "OCCUPATIONAL VALUES"**

Note that the columns in Table I of this appendix captioned "Oral Ingestion ALI," "Inhalation ALI," and "DAC," are applicable to occupational exposure to radioactive material.

The ALIs in this appendix are the annual intakes of given radionuclide by "Reference Person" which would result in either (1) a committed effective dose equivalent of 5 rem (0.05 Sv), stochastic ALI, or (2) a committed dose equivalent of 50 rem (0.5 Sv) to an organ or tissue, nonstochastic ALI. The stochastic ALIs were derived to result in a risk, due to irradiation of organs and tissues, comparable to the risk associated with deep dose equivalent to the whole body of 5 rem (0.05 Sv). The derivation includes multiplying the committed dose equivalent to an organ or tissue by a weighting factor,  $w_T$ . This weighting factor is the proportion of the risk of stochastic effects resulting from irradiation of the organ or tissue, T, to the total risk of stochastic effects when the whole body is irradiated uniformly. The values of  $w_T$  are listed under the definition of weighting factor in 40.2. The nonstochastic ALIs were derived to avoid nonstochastic effects, such as prompt damage to tissue or reduction in organ function.

A value of  $w_T = 0.06$  is applicable to each of the five organs or tissues in the "remainder" category receiving the highest dose equivalents, and the dose equivalents of all other remaining tissues may be disregarded. The following portions of the GI tract—stomach, small intestine, upper large intestine, and lower large intestine—are to be treated as four separate organs.

The air concentration values listed in Table II, Column 1 were derived by one of two methods. For those radionuclides for which the stochastic limit is governing, the occupational stochastic inhalation ALI was divided by  $2.4 \times 10^9$  (ml), relating the inhalation ALI to the DAC, as explained above, and then divided by a factor of 300. The factor of 300 includes the following components: a factor of 50 to relate the 5 rem (0.05 Sv) annual occupational dose limit to the 0.1 rem limit for members of the public, a factor of 3 to adjust for the difference in exposure time and the inhalation rate for a worker and that for members of the public; and a factor of 2 to adjust the occupational values, derived for adults, so that they are applicable to other age groups.

When an ALI is defined by the stochastic dose limit, this value alone is given. When an ALI is determined by the nonstochastic dose limit to an organ, the organ or tissue to which the limit applies is shown, and the ALI for the stochastic limit is shown in parentheses. Abbreviated organ or tissue designations are used:

LLI wall = lower large intestine wall;  
St. wall = stomach wall;  
Blad wall = bladder wall; and  
Bone surf = bone surface.

The use of the ALIs listed first, the more limiting of the stochastic and nonstochastic ALIs, will ensure that nonstochastic effects are avoided and that the risk of stochastic effects is limited to an acceptably low value. If, in a particular situation involving a radionuclide for which the nonstochastic ALI is limiting, use of that nonstochastic ALI is considered unduly conservative, the licensee may use the stochastic ALI to determine the committed effective dose equivalent. However, the licensee shall also ensure that the 50 rem (0.5 Sv) dose equivalent limit for any organ or tissue is not exceeded by the sum of the external deep dose equivalent plus the internal committed dose equivalent to that organ, not the effective dose. For the case where there is no external dose contribution, this would be demonstrated if the sum of the fractions of the nonstochastic ALIs ( $ALI_{ns}$ ) that contribute to the committed dose equivalent to the organ receiving the highest dose does not exceed unity, that is,  $\Sigma$  (intake (in  $\mu\text{Ci}$ ) of each radionuclide/ $ALI_{ns}$ )  $\leq$  1.0. If there is an external deep dose equivalent contribution of  $H_d$ , then this sum must be less than  $1 - (H_d/50)$ , instead of  $\leq$  1.0.

Note that the dose equivalents for an extremity, skin, and lens of the eye are not considered in computing the committed effective dose equivalent, but are subject to limits that must be met separately.

The derived air concentration (DAC) values are derived limits intended to control chronic occupational exposures. The relationship between the DAC and the ALI is given by:

$DAC = ALI(\text{in } \mu\text{Ci})/(2000 \text{ hours per working year} \times 60 \text{ minutes/hour} \times 2 \times 10^4 \text{ ml per minute}) = [ALI/2.4 \times 10^9] \mu\text{Ci/ml}$ , where  $2 \times 10^4$  ml is the volume of air breathed per minute at work by Reference Person under working conditions of light work.

The DAC values relate to one of two modes of exposure: either external submersion or the internal committed dose equivalents resulting from inhalation of radioactive materials. DACs based upon submersion are for immersion in a semi-infinite cloud of uniform concentration and apply to each radionuclide separately.

The ALI and DAC values include contributions to exposure by the single radionuclide named and any in-growth of daughter radionuclides produced in the body by decay of the parent. However, intakes that include both the parent and daughter radionuclides should be treated by the general method appropriate for mixtures.

The values of ALI and DAC do not apply directly when the individual both ingests and inhales a radionuclide, when the individual is exposed to a mixture of radionuclides by either inhalation or ingestion or both, or when the individual is exposed to both internal and external irradiation. See 641—40.16(136C). When an individual is exposed to radioactive materials which fall under several of the translocation classifications of the same radionuclide, such as, Class D, Class W, or Class Y, the exposure may be evaluated as if it were a mixture of different radionuclides.

It should be noted that the classification of a compound as Class D, W, or Y is based on the chemical form of the compound and does not take into account the radiological half-life of different radionuclides. For this reason, values are given for Class D, W, and Y compounds, even for very short-lived radionuclides.

**TABLE II “EFFLUENT CONCENTRATIONS”**

The columns in Table II of this appendix captioned “Effluents,” “Air” and “Water” are applicable to the assessment and control of dose to the public, particularly in the implementation of the provisions of 641—40.27(136C). The concentration values given in Columns 1 and 2 of Table II are equivalent to the radionuclide concentrations which, if inhaled or ingested continuously over the course of a year, would produce a total effective dose equivalent of 0.05 rem (0.5 mSv).

Consideration of nonstochastic limits has not been included in deriving the air and water effluent concentration limits because nonstochastic effects are presumed not to occur at or below the dose levels established for individual members of the public. For radionuclides, where the nonstochastic limit was governing in deriving the occupational DAC, the stochastic ALI was used in deriving the corresponding airborne effluent limit in Table II. For this reason, the DAC and airborne effluent limits are not always proportional as they were in Appendix A of this chapter of the eighth edition of Volume I of the Suggested State Regulations for Control of Radiation.

The air concentration values listed in Table II, Column 1 were derived by one of two methods. For those radionuclides for which the stochastic limit is governing, the occupational stochastic inhalation ALI was divided by  $2.4 \times 10^9$  (ml), relating the inhalation ALI to the DAC, as explained above, and then divided by a factor of 300. The factor of 300 includes the following components: a factor of 50 to relate the 5 rem (0.05 Sv) annual occupational dose limit to the 0.1 rem limit for members of the public, a factor of 3 to adjust for the difference in exposure time and the inhalation rate for a worker and that for members of the public; and a factor of 2 to adjust the occupational values, derived for adults, so that they are applicable to other age groups.

For those radionuclides for which submersion, that is external dose, is limiting, the occupational DAC in Table I, Column 3 was divided by 219. The factor of 219 is composed of a factor of 50, as described above, and a factor of 4.38 relating occupational exposure for 2,000 hours per year to full-time exposure (8,760 hours per year). Note that an additional factor of 2 for age considerations is not warranted in the submersion case.

The water concentrations were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^7$ . The factor of  $7.3 \times 10^7$  (ml) includes the following components: the factors of 50 and 2 described above and a factor of  $7.3 \times 10^5$  (ml) which is the annual water intake of Reference Person.

Note 2 of this appendix provides groupings of radionuclides which are applicable to unknown mixtures of radionuclides. These groupings, including occupational inhalation ALIs and DACs, air and water effluent concentrations and releases to sewer, require demonstrating that the most limiting radionuclides in successive classes are absent. The limit for the unknown mixture is defined when the presence of one of the listed radionuclides cannot be definitely excluded as being present either from knowledge of the radionuclide composition of the source or from actual measurements.

**TABLE III “RELEASES TO SEWERS”**

The monthly average concentrations for release to sanitary sewerage are applicable to the provisions in 40.72. The concentration values were derived by taking the most restrictive occupational stochastic oral ingestion ALI and dividing by  $7.3 \times 10^6$  (ml). The factor of  $7.3 \times 10^6$  (ml) is composed of a factor of  $7.3 \times 10^5$  (ml), the annual water intake by Reference Person, and a factor of 10, such that the concentrations, if the sewage released by the licensee were the only source of water ingested by a Reference Person during a year, would result in a committed effective dose equivalent of 0.5 rem.

## LIST OF ELEMENTS

Atomic			Atomic		
Name	Symbol	Number	Name	Symbol	Number
Actinium	Ac	89	Mercury	Hg	80
Aluminum	Al	13	Molybdenum	Mo	42
Americium	Am	95	Neodymium	Nd	60
Antimony	Sb	51	Neptunium	Np	93
Argon	Ar	18	Nickel	Ni	28
Arsenic	As	33	Niobium	Nb	41
Astatine	At	85	Osmium	Os	76
Barium	Ba	56	Palladium	Pd	46
Berkelium	Bk	97	Phosphorus	P	15
Beryllium	Be	4	Platinum	Pt	78
Bismuth	Bi	83	Plutonium	Pu	94
Bromine	Br	35	Polonium	Po	84
Cadmium	Cd	48	Potassium	K	19
Calcium	Ca	20	Praseodymium	Pr	59
Californium	Cf	98	Promethium	Pm	61
Carbon	C	6	Protactinium	Pa	91
Cerium	Ce	58	Radium	Ra	88
Cesium	Cs	55	Radon	Rn	86
Chlorine	Cl	17	Rhenium	Re	75
Chromium	Cr	24	Rhodium	Rh	45
Cobalt	Co	27	Rubidium	Rb	37
Copper	Cu	29	Ruthenium	Ru	44
Curium	Cm	96	Samarium	Sm	62
Dysprosium	Dy	66	Scandium	Sc	21
Einsteinium	Es	99	Selenium	Se	34
Erbium	Er	68	Silicon	Si	14
Europium	Eu	63	Silver	Ag	47
Fermium	Fm	100	Sodium	Na	11
Fluorine	F	9	Strontium	Sr	38
Francium	Fr	87	Sulfur	S	16
Gadolinium	Gd	64	Tantalum	Ta	73
Gallium	Ga	31	Technetium	Tc	43
Germanium	Ge	32	Tellurium	Te	52
Gold	Au	79	Terbium	Tb	65
Hafnium	Hf	72	Thallium	Tl	81
Holmium	Ho	67	Thorium	Th	90
Hydrogen	H	1	Thulium	Tm	69
Indium	In	49	Tin	Sn	50
Iodine	I	53	Titanium	Ti	22
Iridium	Ir	77	Tungsten	W	74
Iron	Fe	26	Uranium	U	92
Krypton	Kr	36	Vanadium	V	23
Lanthanum	La	57	Xenon	Xe	54
Lead	Pb	82	Ytterbium	Yb	70
Lutetium	Lu	71	Yttrium	Y	39
Magnesium	Mg	12	Zinc	Zn	30
Manganese	Mn	25	Zirconium	Zr	40
Mendelevium	Md	101			

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
			DAC ( $\mu$ Ci/ml)				Concentration ( $\mu$ Ci/ml)
1 Hydrogen-3	Water, DAC includes skin absorption	8E+4	8E+4	2E-5	1E-7	1E-3	1E-2
Gas (HT or T <sub>2</sub> ) Submersion <sup>1</sup> : Use above values as HT and T <sub>2</sub> oxidize in air and in the body to HTO.							
4 Beryllium-7	W, all compounds except those given for Y	4E+4	2E+4	9E-6	3E-8	6E-4	6E-3
	Y, oxides, halides, and nitrates	-	2E+4	8E-6	3E-8	-	-
4 Beryllium-10	W, see <sup>7</sup> Be	1E+3 LLI wall (1E+3)	2E+2	6E-8	2E-10	-	-
	Y, see <sup>7</sup> Be	-	1E+1	6E-9	2E-11	-	-
6 Carbon-11 <sup>2</sup>	Monoxide	-	1E+6	5E-4	2E-6	-	-
	Dioxide	-	6E+5	3E-4	9E-7	-	-
	Compounds	4E+5	4E+5	2E-4	6E-7	6E-3	6E-2
6 Carbon-14	Monoxide	-	2E+6	7E-4	2E-6	-	-
	Dioxide	-	2E+5	9E-5	3E-7	-	-
	Compounds	2E+3	2E+3	1E-6	3E-9	3E-5	3E-4
9 Fluorine-18 <sup>2</sup>	D, fluorides of H, Li, Na, K, Rb, Cs, and Fr	5E+4	7E+4	3E-5	1E-7	-	-
	St wall (5E+4)	-	-	-	-	7E-4	7E-3
	W, fluorides of Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, As, Sb, Bi, Fe, Ru, Os, Co, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, V, Nb, Ta, Mn, Tc, and Re	9E+4	4E-5	1E-7	-	-	-
	Y, lanthanum fluoride	-	8E+4	3E-5	1E-7	-	-
11 Sodium-22	D, all compounds	4E+2	6E+2	3E-7	9E-10	6E-6	6E-5
11 Sodium-24	D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
12 Magnesium-28	D, all compounds except those given for W	7E+2	2E+3	7E-7	2E-9	9E-6	9E-5
	W, oxides, hydroxides, carbides, halides, and nitrates	-	1E+3	5E-7	2E-9	-	-
13 Aluminum-26	D, all compounds except those given for W	4E+2	6E+1	3E-8	9E-11	6E-6	6E-5
	W, oxides, hydroxides, carbides, halides, and nitrates	-	9E+1	4E-8	1E-10	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
		DAC ( $\mu$ Ci/ml)					
14 Silicon-31	D, all compounds except those given for W and Y W, oxides, hydroxides, carbides, and nitrates Y, aluminosilicate glass	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
		-	3E+4	1E-5	5E-8	-	-
		-	3E+4	1E-5	4E-8	-	-
14 Silicon-32	D, see $^{31}\text{Si}$ LLI wall (3E+3) W, see $^{31}\text{Si}$ Y, see $^{31}\text{Si}$	2E+3	2E+2	1E-7	3E-10	-	-
		-	-	-	-	4E-5	4E-4
		-	1E+2	5E-8	2E-10	-	-
15 Phosphorus-32	D, all compounds except phosphates given for W W, phosphates of Zn <sup>2+</sup> , S <sup>3+</sup> , Mg <sup>2+</sup> , Fe <sup>3+</sup> , Bi <sup>3+</sup> , and lanthanides	6E+2	9E+2	4E-7	1E-9	9E-6	9E-5
		-	4E+2	2E-7	5E-10	-	-
		-	-	-	-	-	-
15 Phosphorus-33	D, see $^{32}\text{P}$ W, see $^{32}\text{P}$	6E+3	8E+3	4E-6	1E-8	8E-5	8E-4
		-	3E+3	1E-6	4E-9	-	-
16 Sulfur-35	Vapor	1E+4	6E-6	2E-8	-	-	-
	D, sulfides and sulfates except those given for W LLI wall (8E+3)	1E+4	2E+4	7E-6	2E-8	-	-
		-	-	-	-	1E-4	1E-3
		6E+3	-	-	-	-	-
	W, elemental sulfur, sulfides of Sr, Ba, Ge, Sn, Pb, As, Sb, Bi, Cu, Ag, Au, Zn, Cd, Hg, W, and Mo. Sulfates of Ca, Sr, Ba, Ra, As, Sb, and Bi	-	2E+3	9E-7	3E-9	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
				DAC ( $\mu$ Ci/ml)			Concentration ( $\mu$ Ci/ml)
17 Chlorine-36	D, chlorides of H, Li, Na, K, Rb, Cs, and Fr	2E+3	2E+3	1E-6	3E-9	2E-5	2E-4
	W, chlorides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mn, Tc, and Re	-	2E+2	1E-7	3E-10	-	-
17 Chlorine-38 <sup>2</sup>	D, see <sup>36</sup> Cl	2E+4	4E+4	2E-5	6E-8	-	-
	St wall (3E+4)	-	-	-	-	3E-4	3E-3
	W, see <sup>36</sup> Cl	-	5E+4	2E-5	6E-8	-	-
17 Chlorine-39 <sup>2</sup>	D, see <sup>36</sup> Cl	2E+4	5E+4	2E-5	7E-8	-	-
	St wall (4E+4)	-	-	-	-	5E-4	5E-3
	W, see <sup>36</sup> Cl	-	6E+4	2E-5	8E-8	-	-
18 Argon-37	Submersion <sup>1</sup>	-	-	1E+0	6E-3	-	-
18 Argon-39	Submersion <sup>1</sup>	-	-	2E-4	8E-7	-	-
18 Argon-41	Submersion <sup>1</sup>	-	-	3E-6	1E-8	-	-
19 Potassium-40	D, all compounds	3E+2	4E+2	2E-7	6E-10	4E-6	4E-5
19 Potassium-42	D, all compounds	5E+3	5E+3	2E-6	7E-9	6E-5	6E-4
19 Potassium-43	D, all compounds	6E+3	9E+3	4E-6	1E-8	9E-5	9E-4
19 Potassium-44 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	9E-8	-	-
	St wall (4E+4)	-	-	-	-	5E-4	5E-3
19 Potassium-45 <sup>2</sup>	D, all compounds	3E+4	1E+5	5E-5	2E-7	-	-
	St wall (5E+4)	-	-	-	-	7E-4	7E-3
20 Calcium-41	W, all compounds	3E+3	4E+3	2E-6	-	-	-
	Bone surf (4E+3)	(4E+3)	-	5E-9	6E-5	6E-4	
20 Calcium-45	W, all compounds	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
20 Calcium-47	W, all compounds	8E+2	9E+2	4E-7	1E-9	1E-5	1E-4
21 Scandium-43	Y, all compounds	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
21 Scandium-44m	Y, all compounds	5E+2	7E+2	3E-7	1E-9	7E-6	7E-5

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average	
		ALI ( $\mu\text{Ci}$ )	ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{ml}$ )	Air ( $\mu\text{Ci}/\text{ml}$ )	Water ( $\mu\text{Ci}/\text{ml}$ )		
21	Scandium-44	Y, all compounds	4E+3	1E+4	5E-6	2E-8	5E-5	5E-4
21	Scandium-46	Y, all compounds	9E+2	2E+2	1E-7	3E-10	1E-5	1E-4
21	Scandium-47	Y, all compounds	2E+3 LLI wall (3E+3)	3E+3	1E-6	4E-9	-	-
21	Scandium-48	Y, all compounds	8E+2	1E+3	6E-7	2E-9	1E-5	1E-4
21	Scandium-49 <sup>2</sup>	Y, all compounds	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
22	Titanium-44	D, all compounds except those given for W and Y W, oxides, hydroxides, carbides, halides, and nitrates Y, SrTiO	3E+2 - -	1E+1 3E+1 6E+0	5E-9 1E-8 2E-9	2E-11 4E-11 8E-12	4E-6 - -	4E-5 - -
22	Titanium-45	D, see <sup>44</sup> Ti W, see <sup>44</sup> Ti Y, see <sup>44</sup> Ti	9E+3 - -	3E+4 4E+4 3E+4	1E-5 1E-5 1E-5	3E-8 5E-8 4E-8	1E-4 - -	1E-3 - -
23	Vanadium-47 <sup>2</sup>	D, all compounds except those given for W W, oxides, hydroxides, carbides, and halides	3E+4 St wall (3E+4) - -	8E+4 3E-5 - 1E+5 4E-5	1E-7 - - 1E-7 1E-7	- - 4E-4 - -	- - 4E-3 - -	- - -
23	Vanadium-48	D, see <sup>47</sup> V W, see <sup>47</sup> V	6E+2 - -	1E+3 6E+2 3E-7	5E-7 3E-7 9E-10	2E-9 9E-10 -	9E-6 - -	9E-5 - -
23	Vanadium-49	D, see <sup>47</sup> V W, see <sup>47</sup> V	7E+4 LLI wall (9E+4) - -	3E+4 Bone surf (3E+4) 2E+4 8E-6	1E-5 - - 2E-8 2E-8	- - 5E-8 - -	- - 1E-3 - -	- - 1E-2 - -
24	Chromium-48	D, all compounds except those given for W and Y W, halides and nitrates Y, oxides and hydroxides	6E+3 - -	1E+4 7E+3 7E+3	5E-6 3E-6 3E-6	2E-8 1E-8 1E-8	8E-5 - -	8E-4 - -
24	Chromium-49 <sup>2</sup>	D, see <sup>48</sup> Cr W, see <sup>48</sup> Cr Y, see <sup>48</sup> Cr	3E+4 - -	8E+4 1E+5 9E+4	4E-5 4E-5 4E-5	1E-7 1E-7 1E-7	4E-4 - -	4E-3 - -

		Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
Atomic Radio- nuclide No.	Class	Col. 1 Oral Ingestion	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average  Concentration ( $\mu$ Ci/ml)	
		ALI ( $\mu$ Ci)	ALI ( $\mu$ Ci)	DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)		
24	Chromium-51	D, see $^{48}\text{Cr}$ W, see $^{48}\text{Cr}$ Y, see $^{48}\text{Cr}$	4E+4 - -	5E+4 2E+4 2E+4	2E-5 1E-5 8E-6	6E-8 3E-8 3E-8	5E-4 - -	5E-3
25	Manganese-51 <sup>2</sup>	D, all compounds except those given for W	2E+4	5E+4	2E-5	7E-8	3E-4	3E-3
		W, oxides, hydroxides, halides, and nitrates	-	6E+4	3E-5	8E-8	-	-
25	Manganese-52m <sup>2</sup>	D, see $^{51}\text{Mn}$	3E+4 (4E+4)	9E+4	4E-5	1E-7	-	-
		W, see $^{51}\text{Mn}$	-	1E+5	4E-5	1E-7	-	-
25	Manganese-52	D, see $^{51}\text{Mn}$	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
		W, see $^{51}\text{Mn}$	-	9E+2	4E-7	1E-9	-	-
25	Manganese-53	D, see $^{51}\text{Mn}$	5E+4	1E+4	5E-6	-	7E-4	7E-3
		W, see $^{51}\text{Mn}$	- (2E+4)	- 1E+4	- 5E-6	3E-8 2E-8	-	-
25	Manganese-54	D, see $^{51}\text{Mn}$	2E+3	9E+2	4E-7	1E-9	3E-5	3E-4
		W, see $^{51}\text{Mn}$	-	8E+2	3E-7	1E-9	-	-
25	Manganese-56	D, see $^{51}\text{Mn}$	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
		W, see $^{51}\text{Mn}$	-	2E+4	9E-6	3E-8	-	-
26	Iron-52	D, all compounds except those given for W	9E+2	3E+3	1E-6	4E-9	1E-5	1E-4
		W, oxides, hydroxides, and halides	-	2E+3	1E-6	3E-9	-	-
26	Iron-55	D, see $^{52}\text{Fe}$	9E+3	2E+3	8E-7	3E-9	1E-4	1E-3
		W, see $^{52}\text{Fe}$	-	4E+3	2E-6	6E-9	-	-
26	Iron-59	D, see $^{52}\text{Fe}$	8E+2	3E+2	1E-7	5E-10	1E-5	1E-4
		W, see $^{52}\text{Fe}$	-	5E+2	2E-7	7E-10	-	-
26	Iron-60	D, see $^{52}\text{Fe}$	3E+1	6E+0	3E-9	9E-12	4E-7	4E-6
		W, see $^{52}\text{Fe}$	-	2E+1	8E-9	3E-11	-	-
27	Cobalt-55	W, all compounds except those given for Y	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
		Y, oxides, hydroxides, halides, and nitrates	-	3E+3	1E-6	4E-9	-	-
27	Cobalt-56	W, see $^{55}\text{Co}$	5E+2	3E+2	1E-7	4E-10	6E-6	6E-5
		Y, see $^{55}\text{Co}$	4E+2	2E+2	8E-8	3E-10	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DAC ( $\mu$ Ci/ml)	Col. 1	Col. 2	Monthly Average
			INHALATION		Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
27 Cobalt-57	W, see $^{55}\text{Co}$	8E+3	3E+3	1E-6	4E-9	6E-5	6E-4
	Y, see $^{55}\text{Co}$	4E+3	7E+2	3E-7	9E-10	-	-
27 Cobalt-58m	W, see $^{55}\text{Co}$	6E+4	9E+4	4E-5	1E-7	8E-4	8E-3
	Y, see $^{55}\text{Co}$	-	6E+4	3E-5	9E-8	-	-
27 Cobalt-58	W, see $^{55}\text{Co}$	2E+3	1E+3	5E-7	2E-9	2E-5	2E-4
	Y, see $^{55}\text{Co}$	1E+3	7E+2	3E-7	1E-9	-	-
27 Cobalt-60m <sup>2</sup>	W, see $^{55}\text{Co}$	1E+6	4E+6	2E-3	6E-6	-	-
	St wall	(1E+6)	-	-	-	2E-2	2E-1
	Y, see $^{55}\text{Co}$	-	3E+6	1E-3	4E-6	-	-
27 Cobalt-60	W, see $^{55}\text{Co}$	5E+2	2E+2	7E-8	2E-10	3E-6	3E-5
	Y, see $^{55}\text{Co}$	2E+2	3E+1	1E-8	5E-11	-	-
27 Cobalt-61 <sup>2</sup>	W, see $^{55}\text{Co}$	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
	Y, see $^{55}\text{Co}$	2E+4	6E+4	2E-5	8E-8	-	-
27 Cobalt-62m <sup>2</sup>	W, see $^{55}\text{Co}$	4E+4	2E+5	7E-5	2E-7	-	-
	St wall	(5E+4)	-	-	-	7E-4	7E-3
	Y, see $^{55}\text{Co}$	-	2E+5	6E-5	2E-7	-	-
28 Nickel-56	D, all compounds except those given for W	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
	W, oxides, hydroxides, and carbides	-	1E+3	5E-7	2E-9	-	-
	Vapor	-	1E+3	5E-7	2E-9	-	-
28 Nickel-57	D, see $^{56}\text{Ni}$	2E+3	5E+3	2E-6	7E-9	2E-5	2E-4
	W, see $^{56}\text{Ni}$	-	3E+3	1E-6	4E-9	-	-
	Vapor	-	6E+3	3E-6	9E-9	-	-
28 Nickel-59	D, see $^{56}\text{Ni}$	2E+4	4E+3	2E-6	5E-9	3E-4	3E-3
	W, see $^{56}\text{Ni}$	-	7E+3	3E-6	1E-8	-	-
	Vapor	-	2E+3	8E-7	3E-9	-	-
28 Nickel-63	D, see $^{56}\text{Ni}$	9E+3	2E+3	7E-7	2E-9	1E-4	1E-3
	W, see $^{56}\text{Ni}$	-	3E+3	1E-6	4E-9	-	-
	Vapor	-	8E+2	3E-7	1E-9	-	-
28 Nickel-65	D, see $^{56}\text{Ni}$	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
	W, see $^{56}\text{Ni}$	-	3E+4	1E-5	4E-8	-	-
	Vapor	-	2E+4	7E-6	2E-8	-	-
28 Nickel-66	D, see $^{56}\text{Ni}$	4E+2	2E+3	7E-7	2E-9	-	-
	LLI wall	(5E+2)	-	-	-	6E-6	6E-5
	W, see $^{56}\text{Ni}$	-	6E+2	3E-7	9E-10	-	-
	Vapor	-	3E+3	1E-6	4E-9	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
29 Copper-60 <sup>2</sup>	D, all compounds except those given for W and Y	3E+4	9E+4	4E-5	1E-7	-	-
		St wall (3E+4)	-	-	-	4E-4	4E-3
		W, sulfides, halides, and nitrates	-	1E+5	5E-5	2E-7	-
29 Copper-61	D, see <sup>60</sup> Cu W, see <sup>60</sup> Cu Y, see <sup>60</sup> Cu	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
		-	4E+4	2E-5	6E-8	-	-
		-	4E+4	1E-5	5E-8	-	-
29 Copper-64	D, see <sup>60</sup> Cu W, see <sup>60</sup> Cu Y, see <sup>60</sup> Cu	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
		-	2E+4	1E-5	3E-8	-	-
		-	2E+4	9E-6	3E-8	-	-
29 Copper-67	D, see <sup>60</sup> Cu W, see <sup>60</sup> Cu Y, see <sup>60</sup> Cu	5E+3	8E+3	3E-6	1E-8	6E-5	6E-4
		-	5E+3	2E-6	7E-9	-	-
		-	5E+3	2E-6	6E-9	-	-
30 Zinc-62	Y, all compounds	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
30 Zinc-63 <sup>2</sup>	Y, all compounds	2E+4	7E+4	3E-5	9E-8	-	-
		St wall (3E+4)	-	-	-	3E-4	3E-3
30 Zinc-65	Y, all compounds	4E+2	3E+2	1E-7	4E-10	5E-6	5E-5
30 Zinc-69m	Y, all compounds	4E+3	7E+3	3E-6	1E-8	6E-5	6E-4
30 Zinc-69 <sup>2</sup>	Y, all compounds	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
30 Zinc-71m	Y, all compounds	6E+3	2E+4	7E-6	2E-8	8E-5	8E-4
30 Zinc-72	Y, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
31 Gallium-65 <sup>2</sup>	D, all compounds except those given for W	5E+4	2E+5	7E-5	2E-7	-	-
		St wall (6E+4)	-	-	-	9E-4	9E-3
		W, oxides, hydroxides, carbides, halides, and nitrates	-	2E+5	8E-5	3E-7	-
31 Gallium-66	D, see <sup>65</sup> Ga W, see <sup>65</sup> Ga	1E+3	4E+3	1E-6	5E-9	1E-5	1E-4
		-	3E+3	1E-6	4E-9	-	-
31 Gallium-67	D, see <sup>65</sup> Ga W, see <sup>65</sup> Ga	7E+3	1E+4	6E-6	2E-8	1E-4	1E-3
		-	1E+4	4E-6	1E-8	-	-
31 Gallium-68 <sup>2</sup>	D, see <sup>65</sup> Ga W, see <sup>65</sup> Ga	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		-	5E+4	2E-5	7E-8	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
			DAC ( $\mu$ Ci/ml)				
31 Gallium-70 <sup>2</sup>	D, see <sup>65</sup> Ga	5E+4 St wall (7E+4)	2E+5	7E-5	2E-7	-	-
	W, see <sup>65</sup> Ga	-	2E+5	8E-5	3E-7	1E-3	1E-2
31 Gallium-72	D, see <sup>65</sup> Ga	1E+3	4E+3	1E-6	5E-9	2E-5	2E-4
	W, see <sup>65</sup> Ga	-	3E+3	1E-6	4E-9	-	-
31 Gallium-73	D, see <sup>65</sup> Ga	5E+3	2E+4	6E-6	2E-8	7E-5	7E-4
	W, see <sup>65</sup> Ga	-	2E+4	6E-6	2E-8	-	-
32 Germanium-66	D, all compounds except those given for W	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
	W, oxides, sulfides, and halides	-	2E+4	8E-6	3E-8	-	-
32 Germanium-67 <sup>2</sup>	D, see <sup>66</sup> Ge	3E+4 St wall (4E+4)	9E+4	4E-5	1E-7	-	-
	W, see <sup>66</sup> Ge	-	1E+5	4E-5	1E-7	6E-4	6E-3
32 Germanium-68	D, see <sup>66</sup> Ge	5E+3	4E+3	2E-6	5E-9	6E-5	6E-4
	W, see <sup>66</sup> Ge	-	1E+2	4E-8	1E-10	-	-
32 Germanium-69	D, see <sup>66</sup> Ge	1E+4	2E+4	6E-6	2E-8	2E-4	2E-3
	W, see <sup>66</sup> Ge	-	8E+3	3E-6	1E-8	-	-
32 Germanium-71	D, see <sup>66</sup> Ge	5E+5	4E+5	2E-4	6E-7	7E-3	7E-2
	W, see <sup>66</sup> Ge	-	4E+4	2E-5	6E-8	-	-
32 Germanium-75 <sup>2</sup>	D, see <sup>66</sup> Ge	4E+4 St wall (7E+4)	8E+4	3E-5	1E-7	-	-
	W, see <sup>66</sup> Ge	-	8E+4	4E-5	1E-7	9E-4	9E-3
32 Germanium-77	D, see <sup>66</sup> Ge	9E+3	1E+4	4E-6	1E-8	1E-4	1E-3
	W, see <sup>66</sup> Ge	-	6E+3	2E-6	8E-9	-	-
32 Germanium-78 <sup>2</sup>	D, see <sup>66</sup> Ge	2E+4 St wall (2E+4)	2E+4	9E-6	3E-8	-	-
	W, see <sup>66</sup> Ge	-	2E+4	9E-6	3E-8	3E-4	3E-3
33 Arsenic-69 <sup>2</sup>	W, all compounds	3E+4 St wall (4E+4)	1E+5	5E-5	2E-7	-	-
		-	-	-	-	6E-4	6E-3
33 Arsenic-70 <sup>2</sup>	W, all compounds	1E+4	5E+4	2E-5	7E-8	2E-4	2E-3
33 Arsenic-71	W, all compounds	4E+3	5E+3	2E-6	6E-9	5E-5	5E-4
33 Arsenic-72	W, all compounds	9E+2	1E+3	6E-7	2E-9	1E-5	1E-4
33 Arsenic-73	W, all compounds	8E+3	2E+3	7E-7	2E-9	1E-4	1E-3

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average	
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)	
33	Arsenic-74	W, all compounds	1E+3	8E+2	3E-7	1E-9	2E-5	2E-4
33	Arsenic-76	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
33	Arsenic-77	W, all compounds	4E+3 LLI wall (5E+3)	5E+3	2E-6	7E-9	-	-
33	Arsenic-78 <sup>2</sup>	W, all compounds	8E+3	2E+4	9E-6	3E-8	1E-4	1E-3
34	Selenium-70 <sup>2</sup>	D, all compounds except those given for W W, oxides, hydroxides, carbides, and elemental Se	2E+4 1E+4	4E+4	2E-5	5E-8	1E-4	1E-3
34	Selenium-73m <sup>2</sup>	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	6E+4 3E+4	2E+5 1E+5	6E-5 6E-5	2E-7 2E-7	4E-4 -	4E-3 -
34	Selenium-73	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	3E+3 -	1E+4 2E+4	5E-6 7E-6	2E-8 2E-8	4E-5 -	4E-4 -
34	Selenium-75	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	5E+2 -	7E+2 6E+2	3E-7 3E-7	1E-9 8E-10	7E-6 -	7E-5 -
34	Selenium-79	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	6E+2 -	8E+2 6E+2	3E-7 2E-7	1E-9 8E-10	8E-6 -	8E-5 -
34	Selenium-81m <sup>2</sup>	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	4E+4 2E+4	7E+4 7E+4	3E-5 3E-5	9E-8 1E-7	3E-4 -	3E-3 -
34	Selenium-81 <sup>2</sup>	D, see <sup>70</sup> Se	6E+4 (8E+4) -	2E+5 - 2E+5	9E-5 - 1E-4	3E-7 - 3E-7	- - -	- - 1E-2
34	Selenium-83 <sup>2</sup>	D, see <sup>70</sup> Se W, see <sup>70</sup> Se	4E+4 3E+4	1E+5 1E+5	5E-5 5E-5	2E-7 2E-7	4E-4 -	4E-3 -
35	Bromine-74m <sup>2</sup>	D, bromides of H, Li, Na, K, Rb, Cs, and Fr	1E+4 (2E+4)	4E+4 -	2E-5 -	5E-8 -	- -	- -
		W, bromides of lanthanides, Be, Mg, Ca, Sr, Ba, Ra, Al, Ga, In, Tl, Ge, Sn, Pb, As, Sb, Bi, Fe, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Au, Zn, Cd, Hg, Sc, Y, Ti, Zr, Hf, V, Nb, Ta, Mn, Tc, and Re	-	4E+4	2E-5	6E-8	- -	- -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 INHALATION	Col. 1 Air ( $\mu\text{Ci}/\text{ml}$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average
				DAC ( $\mu\text{Ci}/\text{ml}$ )			Concentration ( $\mu\text{Ci}/\text{ml}$ )
35	Bromine-74 <sup>2</sup>	D, see <sup>74m</sup> Br	2E+4	7E+4	3E-5	1E-7	-
		St wall (4E+4)	-	-	-	5E-4	5E-3
35	Bromine-75 <sup>2</sup>	D, see <sup>74m</sup> Br	3E+4	5E+4	2E-5	7E-8	-
		St wall (4E+4)	-	-	-	5E-4	5E-3
35	Bromine-76	D, see <sup>74m</sup> Br	4E+3	5E+3	2E-6	7E-9	5E-5
		W, see <sup>74m</sup> Br	-	4E+3	2E-6	6E-9	-
35	Bromine-77	D, see <sup>74m</sup> Br	2E+4	2E+4	1E-5	3E-8	2E-4
		W, see <sup>74m</sup> Br	-	2E+4	8E-6	3E-8	-
35	Bromine-80m	D, see <sup>74m</sup> Br	2E+4	2E+4	7E-6	2E-8	3E-4
		W, see <sup>74m</sup> Br	-	1E+4	6E-6	2E-8	-
35	Bromine-80 <sup>2</sup>	D, see <sup>74m</sup> Br	5E+4	2E+5	8E-5	3E-7	-
		St wall (9E+4)	-	-	-	1E-3	1E-2
35	Bromine-82	D, see <sup>74m</sup> Br	3E+3	4E+3	2E-6	6E-9	4E-5
		W, see <sup>74m</sup> Br	-	4E+3	2E-6	5E-9	-
35	Bromine-83	D, see <sup>74m</sup> Br	5E+4	6E+4	3E-5	9E-8	-
		St wall (7E+4)	-	-	-	9E-4	9E-3
35	Bromine-84 <sup>2</sup>	D, see <sup>74m</sup> Br	2E+4	6E+4	2E-5	8E-8	-
		St wall (3E+4)	-	-	-	4E-4	4E-3
36	Krypton-74 <sup>2</sup>	Submersion <sup>1</sup>	-	-	3E-6	1E-8	-
36	Krypton-76	Submersion <sup>1</sup>	-	-	9E-6	4E-8	-
36	Krypton-77 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-
36	Krypton-79	Submersion <sup>1</sup>	-	-	2E-5	7E-8	-
36	Krypton-81	Submersion <sup>1</sup>	-	-	7E-4	3E-6	-
36	Krypton-83m <sup>2</sup>	Submersion <sup>1</sup>	-	-	1E-2	5E-5	-
36	Krypton-85m	Submersion <sup>1</sup>	-	-	2E-5	1E-7	-
36	Krypton-85	Submersion <sup>1</sup>	-	-	1E-4	7E-7	-
36	Krypton-87 <sup>2</sup>	Submersion <sup>1</sup>	-	-	5E-6	2E-8	-
36	Krypton-88	Submersion <sup>1</sup>	-	-	2E-6	9E-9	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
37 Rubidium-79 <sup>2</sup>	D, all compounds	4E+4 St wall (6E+4)	1E+5	5E-5	2E-7	-	-
37 Rubidium-81m <sup>2</sup>	D, all compounds	2E+5 St wall (3E+5)	3E+5	1E-4	5E-7	-	-
37 Rubidium-81	D, all compounds	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
37 Rubidium-82m	D, all compounds	1E+4	2E+4	7E-6	2E-8	2E-4	2E-3
37 Rubidium-83	D, all compounds	6E+2	1E+3	4E-7	1E-9	9E-6	9E-5
37 Rubidium-84	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37 Rubidium-86	D, all compounds	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
37 Rubidium-87	D, all compounds	1E+3	2E+3	6E-7	2E-9	1E-5	1E-4
37 Rubidium-88 <sup>2</sup>	D, all compounds	2E+4 St wall (3E+4)	6E+4	3E-5	9E-8	-	-
37 Rubidium-89 <sup>2</sup>	D, all compounds	4E+4 St wall (6E+4)	1E+5	6E-5	2E-7	-	-
38 Strontium-80 <sup>2</sup>	D, all soluble compounds except SrTiO <sub>3</sub> Y, all insoluble compounds and SrTiO <sub>3</sub>	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
38 Strontium-81 <sup>2</sup>	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	3E+4 2E+4	8E+4 8E+4	3E-5 3E-5	1E-7 1E-7	3E-4 -	3E-3 -
38 Strontium-82	D, see <sup>80</sup> Sr	3E+2 Y, see <sup>80</sup> Sr	4E+2 2E+2	2E-7 9E+1	6E-10 1E-10	-	-
38 Strontium-83	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	3E+3 2E+3	7E+3 4E+3	3E-6 1E-6	1E-8 5E-9	3E-5 -	3E-4 -
38 Strontium-85m <sup>2</sup>	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	2E+5 -	6E+5 8E+5	3E-4 4E-4	9E-7 1E-6	3E-3 -	3E-2 -
38 Strontium-85	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	3E+3 -	3E+3 2E+3	1E-6 6E-7	4E-9 2E-9	4E-5 -	4E-4 -
38 Strontium-87m	D, see <sup>80</sup> Sr Y, see <sup>80</sup> Sr	5E+4 4E+4	1E+5 2E+5	5E-5 6E-5	2E-7 2E-7	6E-4 -	6E-3 -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DAC ( $\mu$ Ci/ml)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
		INHALATION					
38	Strontium-89	D, see $^{80}\text{Sr}$	6E+2 LLI wall (6E+2)	8E+2 - -	4E-7 - -	1E-9 - -	- -
		Y, see $^{80}\text{Sr}$	5E+2	1E+2	6E-8	2E-10	8E-6 8E-5
38	Strontium-90	D, see $^{80}\text{Sr}$	3E+1 Bone surf	2E+1 Bone surf	8E-9 - -	- -	- -
		Y, see $^{80}\text{Sr}$	(4E+1) - -	(2E+1) 4E+0	- 2E-9	3E-11 6E-12	5E-7 - -
38	Strontium-91	D, see $^{80}\text{Sr}$	2E+3	6E+3	2E-6	8E-9	2E-5 2E-4
		Y, see $^{80}\text{Sr}$	-	4E+3	1E-6	5E-9	- -
38	Strontium-92	D, see $^{80}\text{Sr}$	3E+3	9E+3	4E-6	1E-8	4E-5 4E-4
		Y, see $^{80}\text{Sr}$	-	7E+3	3E-6	9E-9	- -
39	Yttrium-86m <sup>2</sup>	W, all compounds except those given for Y	2E+4	6E+4	2E-5	8E-8	3E-4 3E-3
		Y, oxides and hydroxides	-	5E+4	2E-5	8E-8	- -
39	Yttrium-86	W, see $^{86m}\text{Y}$	1E+3	3E+3	1E-6	5E-9	2E-5 2E-4
		Y, see $^{86m}\text{Y}$	-	3E+3	1E-6	5E-9	- -
39	Yttrium-87	W, see $^{86m}\text{Y}$	2E+3	3E+3	1E-6	5E-9	3E-5 3E-4
		Y, see $^{86m}\text{Y}$	-	3E+3	1E-6	5E-9	- -
39	Yttrium-88	W, see $^{86m}\text{Y}$	1E+3	3E+2	1E-7	3E-10	1E-5 1E-4
		Y, see $^{86m}\text{Y}$	-	2E+2	1E-7	3E-10	- -
39	Yttrium-90m	W, see $^{86m}\text{Y}$	8E+3	1E+4	5E-6	2E-8	1E-4 1E-3
		Y, see $^{86m}\text{Y}$	-	1E+4	5E-6	2E-8	- -
39	Yttrium-90	W, see $^{86m}\text{Y}$	4E+2 LLI wall (5E+2)	7E+2 - -	3E-7 - -	9E-10 - -	- -
		Y, see $^{86m}\text{Y}$	-	6E+2	3E-7	9E-10	7E-6 7E-5
39	Yttrium-91m <sup>2</sup>	W, see $^{86m}\text{Y}$	1E+5	2E+5	1E-4	3E-7	2E-3 2E-2
		Y, see $^{86m}\text{Y}$	-	2E+5	7E-5	2E-7	- -
39	Yttrium-91	W, see $^{86m}\text{Y}$	5E+2 LLI wall (6E+2)	2E+2 - -	7E-8 - -	2E-10 - -	- -
		Y, see $^{86m}\text{Y}$	-	1E+2	5E-8	2E-10	8E-6 8E-5
39	Yttrium-92	W, see $^{86m}\text{Y}$	3E+3	9E+3	4E-6	1E-8	4E-5 4E-4
		Y, see $^{86m}\text{Y}$	-	8E+3	3E-6	1E-8	- -
39	Yttrium-93	W, see $^{86m}\text{Y}$	1E+3	3E+3	1E-6	4E-9	2E-5 2E-4
		Y, see $^{86m}\text{Y}$	-	2E+3	1E-6	3E-9	- -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
39 Yttrium-94 <sup>2</sup>	W, see <sup>86m</sup> Y	2E+4 St wall (3E+4)	8E+4	3E-5	1E-7	-	-
		-	-	-	-	4E-4	4E-3
39 Yttrium-95 <sup>2</sup>	W, see <sup>86m</sup> Y	4E+4 St wall (5E+4)	2E+5	6E-5	2E-7	-	-
		-	8E+4	3E-5	1E-7	-	-
40 Zirconium-86	D, all compounds except those given for W and Y W, oxides, hydroxides, halides, and nitrates Y, carbide	1E+3	4E+3	2E-6	6E-9	2E-5	2E-4
		-	3E+3	1E-6	4E-9	-	-
		-	2E+3	1E-6	3E-9	-	-
40 Zirconium-88	D, see <sup>86</sup> Zr W, see <sup>86</sup> Zr Y, see <sup>86</sup> Zr	4E+3	2E+2	9E-8	3E-10	5E-5	5E-4
		-	5E+2	2E-7	7E-10	-	-
		-	3E+2	1E-7	4E-10	-	-
40 Zirconium-89	D, see <sup>86</sup> Zr W, see <sup>86</sup> Zr Y, see <sup>86</sup> Zr	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
		-	2E+3	1E-6	3E-9	-	-
		-	2E+3	1E-6	3E-9	-	-
40 Zirconium-93	D, see <sup>86</sup> Zr W, see <sup>86</sup> Zr Y, see <sup>86</sup> Zr	1E+3 Bone surf (3E+3)	6E+0 Bone surf (2E+1)	3E-9	-	-	-
		-	2E+1 Bone surf (6E+1)	1E-8	2E-11	4E-5	4E-4
		-	6E+1 Bone surf (7E+1)	2E-8	-	-	-
		-	-	9E-11	-	-	-
		-	-	9E-11	-	-	-
40 Zirconium-95	D, see <sup>86</sup> Zr W, see <sup>86</sup> Zr Y, see <sup>86</sup> Zr	1E+3 Bone surf (3E+2)	1E+2 Bone surf	5E-8	-	2E-5	2E-4
		-	-	4E-10	-	-	-
		-	4E+2	2E-7	5E-10	-	-
40 Zirconium-97	D, see <sup>86</sup> Zr W, see <sup>86</sup> Zr Y, see <sup>86</sup> Zr	-	3E+2	1E-7	4E-10	-	-
		6E+2	2E+3	8E-7	3E-9	9E-6	9E-5
		-	1E+3	6E-7	2E-9	-	-
41 Niobium-88 <sup>2</sup>	W, all compounds except those given for Y Y, oxides and hydroxides	-	1E+3	5E-7	2E-9	-	-
		5E+4 St wall (7E+4)	2E+5	9E-5	3E-7	-	-
		-	-	-	-	1E-3	1E-2
		-	2E+5	9E-5	3E-7	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
		DAC ( $\mu$ Ci/ml)					Concentration ( $\mu$ Ci/ml)
41 Niobium-89 <sup>2</sup> (66 min)	W, see <sup>88</sup> Nb	1E+4	4E+4	2E-5	6E-8	1E-4	1E-3
	Y, see <sup>88</sup> Nb	-	4E+4	2E-5	5E-8	-	-
41 Niobium-89 (122 min)	W, see <sup>88</sup> Nb	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
	Y, see <sup>88</sup> Nb	-	2E+4	6E-6	2E-8	-	-
41 Niobium-90	W, see <sup>88</sup> Nb	1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
	Y, see <sup>88</sup> Nb	-	2E+3	1E-6	3E-9	-	-
41 Niobium-93m	W, see <sup>88</sup> Nb	9E+3	2E+3	8E-7	3E-9	-	-
		LLI wall (1E+4)	-	-	-	2E-4	2E-3
	Y, see <sup>88</sup> Nb	-	2E+2	7E-8	2E-10	-	-
41 Niobium-94	W, see <sup>88</sup> Nb	9E+2	2E+2	8E-8	3E-10	1E-5	1E-4
	Y, see <sup>88</sup> Nb	-	2E+1	6E-9	2E-11	-	-
41 Niobium-95m	W, see <sup>88</sup> Nb	2E+3	3E+3	1E-6	4E-9	-	-
		LLI wall (2E+3)	-	-	-	3E-5	3E-4
	Y, see <sup>88</sup> Nb	-	2E+3	9E-7	3E-9	-	-
41 Niobium-95	W, see <sup>88</sup> Nb	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
	Y, see <sup>88</sup> Nb	-	1E+3	5E-7	2E-9	-	-
41 Niobium-96	W, see <sup>88</sup> Nb	1E+3	3E+3	1E-6	4E-9	2E-5	2E-4
	Y, see <sup>88</sup> Nb	-	2E+3	1E-6	3E-9	-	-
41 Niobium-97 <sup>2</sup>	W, see <sup>88</sup> Nb	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
	Y, see <sup>88</sup> Nb	-	7E+4	3E-5	1E-7	-	-
41 Niobium-98 <sup>2</sup>	W, see <sup>88</sup> Nb	1E+4	5E+4	2E-5	8E-8	2E-4	2E-3
	Y, see <sup>88</sup> Nb	-	5E+4	2E-5	7E-8	-	-
42 Molybdenum-90	D, all compounds except those given for Y	4E+3	7E+3	3E-6	1E-8	3E-5	3E-4
	Y, oxides, hydroxides, and MoS	2E+3	5E+3	2E-6	6E-9	-	-
42 Molybdenum-93m	D, see <sup>90</sup> Mo	9E+3	2E+4	7E-6	2E-8	6E-5	6E-4
	Y, see <sup>90</sup> Mo	4E+3	1E+4	6E-6	2E-8	-	-
42 Molybdenum-93	D, see <sup>90</sup> Mo	4E+3	5E+3	2E-6	8E-9	5E-5	5E-4
	Y, see <sup>90</sup> Mo	2E+4	2E+2	8E-8	2E-10	-	-
42 Molybdenum-99	D, see <sup>90</sup> Mo	2E+3	3E+3	1E-6	4E-9	-	-
		LLI wall (1E+3)	-	-	-	2E-5	2E-4
	Y, see <sup>90</sup> Mo	1E+3	1E+3	6E-7	2E-9	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
42 Molybdenum-101 <sup>2</sup>	D, see <sup>90</sup> Mo	4E+4 St wall (5E+4)	1E+5	6E-5	2E-7	-	-
		-	1E+5	6E-5	2E-7	7E-4	7E-3
43 Technetium-93m <sup>2</sup>	D, all compounds except those given for W W, oxides, hydroxides, halides, and nitrates	7E+4	2E+5	6E-5	2E-7	1E-3	1E-2
		-	3E+5	1E-4	4E-7	-	-
43 Technetium-93	D, see <sup>93m</sup> Tc	3E+4	7E+4	3E-5	1E-7	4E-4	4E-3
	W, see <sup>93m</sup> Tc	-	1E+5	4E-5	1E-7	-	-
43 Technetium-94m <sup>2</sup>	D, see <sup>93m</sup> Tc	2E+4	4E+4	2E-5	6E-8	3E-4	3E-3
	W, see <sup>93m</sup> Tc	-	6E+4	2E-5	8E-8	-	-
43 Technetium-94	D, see <sup>93m</sup> Tc	9E+3	2E+4	8E-6	3E-8	1E-4	1E-3
	W, see <sup>93m</sup> Tc	-	2E+4	1E-5	3E-8	-	-
43 Technetium-95m	D, see <sup>93m</sup> Tc	4E+3	5E+3	2E-6	8E-9	5E-5	5E-4
	W, see <sup>93m</sup> Tc	-	2E+3	8E-7	3E-9	-	-
43 Technetium-95	D, see <sup>93m</sup> Tc	1E+4	2E+4	9E-6	3E-8	1E-4	1E-3
	W, see <sup>93m</sup> Tc	-	2E+4	8E-6	3E-8	-	-
43 Technetium-96m <sup>2</sup>	D, see <sup>93m</sup> Tc	2E+5	3E+5	1E-4	4E-7	2E-3	2E-2
	W, see <sup>93m</sup> Tc	-	2E+5	1E-4	3E-7	-	-
43 Technetium-96	D, see <sup>93m</sup> Tc	2E+3	3E+3	1E-6	5E-9	3E-5	3E-4
	W, see <sup>93m</sup> Tc	-	2E+3	9E-7	3E-9	-	-
43 Technetium-97m	D, see <sup>93m</sup> Tc	5E+3 St wall (7E+3)	7E+3	3E-6	-	6E-5	6E-4
		-	1E+3	5E-7	2E-9	-	-
43 Technetium-97	D, see <sup>93m</sup> Tc	4E+4	5E+4	2E-5	7E-8	5E-4	5E-3
	W, see <sup>93m</sup> Tc	-	6E+3	2E-6	8E-9	-	-
43 Technetium-98	D, see <sup>93m</sup> Tc	1E+3	2E+3	7E-7	2E-9	1E-5	1E-4
	W, see <sup>93m</sup> Tc	-	3E+2	1E-7	4E-10	-	-
43 Technetium-99m	D, see <sup>93m</sup> Tc	8E+4	2E+5	6E-5	2E-7	1E-3	1E-2
	W, see <sup>93m</sup> Tc	-	2E+5	1E-4	3E-7	-	-
43 Technetium-99	D, see <sup>93m</sup> Tc	4E+3 St wall (6E+3)	5E+3	2E-6	-	6E-5	6E-4
		-	8E-9	-	-	-	-
	W, see <sup>93m</sup> Tc	-	7E+2	3E-7	9E-10	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
			DAC ( $\mu$ Ci/ml)				
43	Technetium-101 <sup>2</sup>	D, see <sup>93m</sup> Tc	9E+4 St wall (1E+5)	3E+5	1E-4	5E-7	-
		W, see <sup>93m</sup> Tc	-	4E+5	2E-4	5E-7	2E-3 2E-2
43	Technetium-104 <sup>2</sup>	D, see <sup>93m</sup> Tc	2E+4 St wall (3E+4)	7E+4	3E-5	1E-7	-
		W, see <sup>93m</sup> Tc	-	9E+4	4E-5	1E-7	4E-4 4E-3
44	Ruthenium-94 <sup>2</sup>	D, all compounds except those given for W and Y	2E+4	4E+4	2E-5	6E-8	2E-4 2E-3
		W, halides	-	6E+4	3E-5	9E-8	-
		Y, oxides and hydroxides	-	6E+4	2E-5	8E-8	-
44	Ruthenium-97	D, see <sup>94</sup> Ru	8E+3	2E+4	8E-6	3E-8	1E-4 1E-3
		W, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-
		Y, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-
44	Ruthenium-103	D, see <sup>94</sup> Ru	2E+3	2E+3	7E-7	2E-9	3E-5 3E-4
		W, see <sup>94</sup> Ru	-	1E+3	4E-7	1E-9	-
		Y, see <sup>94</sup> Ru	-	6E+2	3E-7	9E-10	-
44	Ruthenium-105	D, see <sup>94</sup> Ru	5E+3	1E+4	6E-6	2E-8	7E-5 7E-4
		W, see <sup>94</sup> Ru	-	1E+4	6E-6	2E-8	-
		Y, see <sup>94</sup> Ru	-	1E+4	5E-6	2E-8	-
44	Ruthenium-106	D, see <sup>94</sup> Ru	2E+2 LLI wall (2E+2)	9E+1	4E-8	1E-10	-
		W, see <sup>94</sup> Ru	-	5E+1	2E-8	8E-11	-
		Y, see <sup>94</sup> Ru	-	1E+1	5E-9	2E-11	-
45	Rhodium-99m	D, all compounds except those given for W and Y	2E+4	6E+4	2E-5	8E-8	2E-4 2E-3
		W, halides	-	8E+4	3E-5	1E-7	-
		Y, oxides and hydroxides	-	7E+4	3E-5	9E-8	-
45	Rhodium-99	D, see <sup>99m</sup> Rh	2E+3	3E+3	1E-6	4E-9	3E-5 3E-4
		W, see <sup>99m</sup> Rh	-	2E+3	9E-7	3E-9	-
		Y, see <sup>99m</sup> Rh	-	2E+3	8E-7	3E-9	-
45	Rhodium-100	D, see <sup>99m</sup> Rh	2E+3	5E+3	2E-6	7E-9	2E-5 2E-4
		W, see <sup>99m</sup> Rh	-	4E+3	2E-6	6E-9	-
		Y, see <sup>99m</sup> Rh	-	4E+3	2E-6	5E-9	-
45	Rhodium-101m	D, see <sup>99m</sup> Rh	6E+3	1E+4	5E-6	2E-8	8E-5 8E-4
		W, see <sup>99m</sup> Rh	-	8E+3	4E-6	1E-8	-
		Y, see <sup>99m</sup> Rh	-	8E+3	3E-6	1E-8	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
45 Rhodium-101	D, see $^{99m}$ Rh	2E+3	5E+2	2E-7	7E-10	3E-5	3E-4
	W, see $^{99m}$ Rh	-	8E+2	3E-7	1E-9	-	-
	Y, see $^{99m}$ Rh	-	2E+2	6E-8	2E-10	-	-
45 Rhodium-102m	D, see $^{99m}$ Rh	1E+3 LLI wall (1E+3)	5E+2	2E-7	7E-10	-	-
	W, see $^{99m}$ Rh	-	4E+2	2E-7	5E-10	-	-
	Y, see $^{99m}$ Rh	-	1E+2	5E-8	2E-10	-	-
45 Rhodium-102	D, see $^{99m}$ Rh	6E+2	9E+1	4E-8	1E-10	8E-6	8E-5
	W, see $^{99m}$ Rh	-	2E+2	7E-8	2E-10	-	-
	Y, see $^{99m}$ Rh	-	6E+1	2E-8	8E-11	-	-
45 Rhodium-103m <sup>2</sup>	D, see $^{99m}$ Rh	4E+5	1E+6	5E-4	2E-6	6E-3	6E-2
	W, see $^{99m}$ Rh	-	1E+6	5E-4	2E-6	-	-
	Y, see $^{99m}$ Rh	-	1E+6	5E-4	2E-6	-	-
45 Rhodium-105	D, see $^{99m}$ Rh	4E+3 LLI wall (4E+3)	1E+4	5E-6	2E-8	-	-
	W, see $^{99m}$ Rh	-	6E+3	3E-6	9E-9	-	-
	Y, see $^{99m}$ Rh	-	6E+3	2E-6	8E-9	-	-
45 Rhodium-106m	D, see $^{99m}$ Rh	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
	W, see $^{99m}$ Rh	-	4E+4	2E-5	5E-8	-	-
	Y, see $^{99m}$ Rh	-	4E+4	1E-5	5E-8	-	-
45 Rhodium-107 <sup>2</sup>	D, see $^{99m}$ Rh	7E+4 St wall (9E+4)	2E+5	1E-4	3E-7	-	-
	W, see $^{99m}$ Rh	-	3E+5	1E-4	4E-7	-	-
	Y, see $^{99m}$ Rh	-	3E+5	1E-4	3E-7	-	-
46 Palladium-100	D, all compounds except those given for W and Y	1E+3	1E+3	6E-7	2E-9	2E-5	2E-4
	W, nitrates	-	1E+3	5E-7	2E-9	-	-
	Y, oxides and hydroxides	-	1E+3	6E-7	2E-9	-	-
46 Palladium-101	D, see $^{100}$ Pd	1E+4	3E+4	1E-5	5E-8	2E-4	2E-3
	W, see $^{100}$ Pd	-	3E+4	1E-5	5E-8	-	-
	Y, see $^{100}$ Pd	-	3E+4	1E-5	4E-8	-	-
46 Palladium-103	D, see $^{100}$ Pd	6E+3 LLI wall (7E+3)	6E+3	3E-6	9E-9	-	-
	W, see $^{100}$ Pd	-	4E+3	2E-6	6E-9	-	-
	Y, see $^{100}$ Pd	-	4E+3	1E-6	5E-9	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
		LLI wall (4E+4)	DAC ( $\mu$ Ci/ml)	Kidneys (2E+4)			
46	Palladium-107	D, see $^{100}\text{Pd}$	3E+4 LLI wall (4E+4)	2E+4 Kidneys (2E+4)	9E-6	-	-
		W, see $^{100}\text{Pd}$	-	7E+3	3E-6	3E-8	5E-4
		Y, see $^{100}\text{Pd}$	-	4E+2	2E-7	6E-10	-
46	Palladium-109	D, see $^{100}\text{Pd}$	2E+3	6E+3	3E-6	9E-9	3E-5
		W, see $^{100}\text{Pd}$	-	5E+3	2E-6	8E-9	-
		Y, see $^{100}\text{Pd}$	-	5E+3	2E-6	6E-9	-
47	Silver-102 <sup>2</sup>	D, all compounds except those given for W and Y	5E+4 St wall (6E+4)	2E+5	8E-5	2E-7	-
		W, nitrates and sulfides	-	2E+5	9E-5	3E-7	-
		Y, oxides and hydroxides	-	2E+5	8E-5	3E-7	-
47	Silver-103 <sup>2</sup>	D, see $^{102}\text{Ag}$	4E+4	1E+5	4E-5	1E-7	5E-4
		W, see $^{102}\text{Ag}$	-	1E+5	5E-5	2E-7	-
		Y, see $^{102}\text{Ag}$	-	1E+5	5E-5	2E-7	-
47	Silver-104m <sup>2</sup>	D, see $^{102}\text{Ag}$	3E+4	9E+4	4E-5	1E-7	4E-4
		W, see $^{102}\text{Ag}$	-	1E+5	5E-5	2E-7	-
		Y, see $^{102}\text{Ag}$	-	1E+5	5E-5	2E-7	-
47	Silver-104 <sup>2</sup>	D, see $^{102}\text{Ag}$	2E+4	7E+4	3E-5	1E-7	3E-4
		W, see $^{102}\text{Ag}$	-	1E+5	6E-5	2E-7	-
		Y, see $^{102}\text{Ag}$	-	1E+5	6E-5	2E-7	-
47	Silver-105	D, see $^{102}\text{Ag}$	3E+3	1E+3	4E-7	1E-9	4E-5
		W, see $^{102}\text{Ag}$	-	2E+3	7E-7	2E-9	-
		Y, see $^{102}\text{Ag}$	-	2E+3	7E-7	2E-9	-
47	Silver-106m	D, see $^{102}\text{Ag}$	8E+2	7E+2	3E-7	1E-9	1E-5
		W, see $^{102}\text{Ag}$	-	9E+2	4E-7	1E-9	-
		Y, see $^{102}\text{Ag}$	-	9E+2	4E-7	1E-9	-
47	Silver-106 <sup>2</sup>	D, see $^{102}\text{Ag}$	6E+4 St wall (6E+4)	2E+5	8E-5	3E-7	-
		W, see $^{102}\text{Ag}$	-	2E+5	9E-5	3E-7	-
		Y, see $^{102}\text{Ag}$	-	2E+5	8E-5	3E-7	-
47	Silver-108m	D, see $^{102}\text{Ag}$	6E+2	2E+2	8E-8	3E-10	9E-6
		W, see $^{102}\text{Ag}$	-	3E+2	1E-7	4E-10	-
		Y, see $^{102}\text{Ag}$	-	2E+1	1E-8	3E-11	-
47	Silver-110m	D, see $^{102}\text{Ag}$	5E+2	1E+2	5E-8	2E-10	6E-6
		W, see $^{102}\text{Ag}$	-	2E+2	8E-8	3E-10	-
		Y, see $^{102}\text{Ag}$	-	9E+1	4E-8	1E-10	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
47 Silver-111	D, see $^{102}\text{Ag}$	9E+2 LLI wall (1E+3)	2E+3 (2E+3)	6E-7	-	-	-
		W, see $^{102}\text{Ag}$	-	9E+2	2E-9	2E-5	2E-4
		Y, see $^{102}\text{Ag}$	-	9E+2	4E-7	-	-
47 Silver-112	D, see $^{102}\text{Ag}$ W, see $^{102}\text{Ag}$ Y, see $^{102}\text{Ag}$	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
		-	1E+4	4E-6	1E-8	-	-
		-	9E+3	4E-6	1E-8	-	-
47 Silver-115 <sup>2</sup>	D, see $^{102}\text{Ag}$	3E+4 St wall (3E+4)	9E+4	4E-5	1E-7	-	-
		-	-	-	-	4E-4	4E-3
		W, see $^{102}\text{Ag}$	-	9E+4	4E-5	1E-7	-
48 Cadmium-104 <sup>2</sup>	D, all compounds except those given for W and Y W, sulfides, halides, and nitrates Y, oxides and hydroxides	2E+4	7E+4	3E-5	9E-8	3E-4	3E-3
		-	1E+5	5E-5	2E-7	-	-
		-	1E+5	5E-5	2E-7	-	-
48 Cadmium-107	D, see $^{104}\text{Cd}$ W, see $^{104}\text{Cd}$ Y, see $^{104}\text{Cd}$	2E+4	5E+4	2E-5	8E-8	3E-4	3E-3
		-	6E+4	2E-5	8E-8	-	-
		-	5E+4	2E-5	7E-8	-	-
48 Cadmium-109	D, see $^{104}\text{Cd}$	3E+2 Kidneys (4E+2)	4E+1 Kidneys (5E+1)	1E-8	-	-	-
		-	1E+2 Kidneys (1E+2)	5E-8	7E-11	6E-6	6E-5
		-	1E+2 Kidneys (1E+2)	-	-	-	-
48 Cadmium-113m	D, see $^{104}\text{Cd}$	2E+1 Kidneys (4E+1)	2E+0 Kidneys (4E+0)	1E-9	-	-	-
		-	8E+0	4E-9	5E-12	5E-7	5E-6
		-	(1E+1)	-	2E-11	-	-
48 Cadmium-113	D, see $^{104}\text{Cd}$	-	1E+1	5E-9	2E-11	-	-
		2E+1 Kidneys (3E+1)	2E+0 Kidneys (3E+0)	-	5E-12	4E-7	4E-6
		-	8E+0	3E-9	-	-	-
	W, see $^{104}\text{Cd}$	-	(1E+1)	-	2E-11	-	-
		-	1E+1	5E-9	2E-11	-	-
		-	1E+1	6E-9	2E-11	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 INHALATION Kidneys ( $\mu\text{Ci}/\text{ml}$ )	Col. 1 Air ( $\mu\text{Ci}/\text{ml}$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average
				DAC ( $\mu\text{Ci}/\text{ml}$ )			Concentration ( $\mu\text{Ci}/\text{ml}$ )
48 Cadmium-115m	D, see $^{104}\text{Cd}$	3E+2	5E+1 (8E+1)	2E-8	-	4E-6	4E-5
	W, see $^{104}\text{Cd}$	-	1E+2	5E-8	1E-10	-	-
	Y, see $^{104}\text{Cd}$	-	1E+2	6E-8	2E-10	-	-
48 Cadmium-115	D, see $^{104}\text{Cd}$	9E+2 LLI wall (1E+3)	1E+3	6E-7	2E-9	-	-
	W, see $^{104}\text{Cd}$	-	1E+3	5E-7	2E-9	-	-
	Y, see $^{104}\text{Cd}$	-	1E+3	6E-7	2E-9	-	-
48 Cadmium-117m	D, see $^{104}\text{Cd}$	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
	W, see $^{104}\text{Cd}$	-	2E+4	7E-6	2E-8	-	-
	Y, see $^{104}\text{Cd}$	-	1E+4	6E-6	2E-8	-	-
48 Cadmium-117	D, see $^{104}\text{Cd}$	5E+3	1E+4	5E-6	2E-8	6E-5	6E-4
	W, see $^{104}\text{Cd}$	-	2E+4	7E-6	2E-8	-	-
	Y, see $^{104}\text{Cd}$	-	1E+4	6E-6	2E-8	-	-
49 Indium-109	D, all compounds except those given for W	2E+4	4E+4	2E-5	6E-8	3E-4	3E-3
	W, oxides, hydroxides, halides, and nitrates	-	6E+4	3E-5	9E-8	-	-
49 Indium-110 <sup>2</sup> (69.1 min)	D, see $^{109}\text{In}$	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
	W, see $^{109}\text{In}$	-	6E+4	2E-5	8E-8	-	-
49 Indium-110 (4.9 h)	D, see $^{109}\text{In}$	5E+3	2E+4	7E-6	2E-8	7E-5	7E-4
	W, see $^{109}\text{In}$	-	2E+4	8E-6	3E-8	-	-
49 Indium-111	D, see $^{109}\text{In}$	4E+3	6E+3	3E-6	9E-9	6E-5	6E-4
	W, see $^{109}\text{In}$	-	6E+3	3E-6	9E-9	-	-
49 Indium-112 <sup>2</sup>	D, see $^{109}\text{In}$	2E+5	6E+5	3E-4	9E-7	2E-3	2E-2
	W, see $^{109}\text{In}$	-	7E+5	3E-4	1E-6	-	-
49 Indium-113m <sup>2</sup>	D, see $^{109}\text{In}$	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
	W, see $^{109}\text{In}$	-	2E+5	8E-5	3E-7	-	-
49 Indium-114m	D, see $^{109}\text{In}$	3E+2 LLI wall (4E+2)	6E+1	3E-8	9E-11	-	-
	W, see $^{109}\text{In}$	-	1E+2	4E-8	1E-10	5E-6	5E-5
49 Indium-115m	D, see $^{109}\text{In}$	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
	W, see $^{109}\text{In}$	-	5E+4	2E-5	7E-8	-	-
49 Indium-115	D, see $^{109}\text{In}$	4E+1	1E+0	6E-10	2E-12	5E-7	5E-6
	W, see $^{109}\text{In}$	-	5E+0	2E-9	8E-12	-	-
49 Indium-116m <sup>2</sup>	D, see $^{109}\text{In}$	2E+4	8E+4	3E-5	1E-7	3E-4	3E-3
	W, see $^{109}\text{In}$	-	1E+5	5E-5	2E-7	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI (µCi)	Col. 3 DACP (µCi/ml)	Col. 1	Col. 2	Monthly Average
		<u>INHALATION</u>			Air (µCi/ml)	Water (µCi/ml)	Concentration (µCi/ml)
49	Indium-117m <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	1E+4 -	3E+4 4E+4	1E-5 2E-5	5E-8 6E-8	2E-4 -
49	Indium-117 <sup>2</sup>	D, see <sup>109</sup> In W, see <sup>109</sup> In	6E+4 -	2E+5 2E+5	7E-5 9E-5	2E-7 3E-7	8E-4 -
49	Indium-119m <sup>2</sup>	D, see <sup>109</sup> In	4E+4 (5E+4) W, see <sup>109</sup> In	1E+5 -	5E-5 6E-5	2E-7 2E-7	- -
50	Tin-110	D, all compounds except those given for W W, sulfides, oxides, hydroxides, halides, nitrates, and stannic phosphate	4E+3 -	1E+4 1E+4	5E-6 5E-6	2E-8 2E-8	5E-5 5E-4
50	Tin-111 <sup>2</sup>	D, see <sup>110</sup> Sn W, see <sup>110</sup> Sn	7E+4 -	2E+5 3E+5	9E-5 1E-4	3E-7 4E-7	1E-3 -
50	Tin-113	D, see <sup>110</sup> Sn	2E+3 (2E+3) W, see <sup>110</sup> Sn	1E+3 -	5E-7 -	2E-9 -	- -
50	Tin-117m	D, see <sup>110</sup> Sn	2E+3 (2E+3) W, see <sup>110</sup> Sn	1E+3 (2E+3) 1E+3	5E-7 -	- 3E-9	- 3E-5
50	Tin-119m	D, see <sup>110</sup> Sn	3E+3 (4E+3) W, see <sup>110</sup> Sn	2E+3 -	1E-6 4E-7	3E-9 1E-9	- -
50	Tin-121m	D, see <sup>110</sup> Sn	3E+3 (4E+3) W, see <sup>110</sup> Sn	LLI wall 9E+2 5E+2	4E-7 -	1E-9 -	- -
50	Tin-121	D, see <sup>110</sup> Sn	6E+3 (6E+3) W, see <sup>110</sup> Sn	LLI wall 2E+4 1E+4	6E-6 5E-6	2E-8 2E-8	- -
50	Tin-123m <sup>2</sup>	D, see <sup>110</sup> Sn W, see <sup>110</sup> Sn	5E+4 -	1E+5 1E+5	5E-5 6E-5	2E-7 2E-7	7E-4 -
50	Tin-123	D, see <sup>110</sup> Sn	5E+2 (6E+2) W, see <sup>110</sup> Sn	LLI wall 2E+2 2E+2	6E+2 7E-8	3E-7 2E-10	9E-10 -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average
		ALI ( $\mu\text{Ci}$ )	ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{ml}$ )	Air ( $\mu\text{Ci}/\text{ml}$ )	Water ( $\mu\text{Ci}/\text{ml}$ )	
50 Tin-125	D, see $^{110}\text{Sn}$	4E+2 LLI wall (5E+2)	9E+2	4E-7	1E-9	-	-
	W, see $^{110}\text{Sn}$	-	4E+2	1E-7	5E-10	6E-6	6E-5
50 Tin-126	D, see $^{110}\text{Sn}$	3E+2	6E+1	2E-8	8E-11	4E-6	4E-5
	W, see $^{110}\text{Sn}$	-	7E+1	3E-8	9E-11	-	-
50 Tin-127	D, see $^{110}\text{Sn}$	7E+3	2E+4	8E-6	3E-8	9E-5	9E-4
	W, see $^{110}\text{Sn}$	-	2E+4	8E-6	3E-8	-	-
50 Tin-128 <sup>2</sup>	D, see $^{110}\text{Sn}$	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
	W, see $^{110}\text{Sn}$	-	4E+4	1E-5	5E-8	-	-
51 Antimony-115 <sup>2</sup>	D, all compounds except those given for W	8E+4	2E+5	1E-4	3E-7	1E-3	1E-2
	W, oxides, hydroxides, halides, sulfides, sulfates, and nitrates	-	3E+5	1E-4	4E-7	-	-
51 Antimony-116m <sup>2</sup>	D, see $^{115}\text{Sb}$	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
	W, see $^{115}\text{Sb}$	-	1E+5	6E-5	2E-7	-	-
51 Antimony-116 <sup>2</sup>	D, see $^{115}\text{Sb}$	7E+4 St wall (9E+4)	3E+5	1E-4	4E-7	-	-
	W, see $^{115}\text{Sb}$	-	3E+5	1E-4	5E-7	1E-3	1E-2
51 Antimony-117	D, see $^{115}\text{Sb}$	7E+4	2E+5	9E-5	3E-7	9E-4	9E-3
	W, see $^{115}\text{Sb}$	-	3E+5	1E-4	4E-7	-	-
51 Antimony-118m	D, see $^{115}\text{Sb}$	6E+3	2E+4	8E-6	3E-8	7E-5	7E-4
	W, see $^{115}\text{Sb}$	5E+3	2E+4	9E-6	3E-8	-	-
51 Antimony-119	D, see $^{115}\text{Sb}$	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
	W, see $^{115}\text{Sb}$	2E+4	3E+4	1E-5	4E-8	-	-
51 Antimony-120 <sup>2</sup> (16 min)	D, see $^{115}\text{Sb}$	1E+5 St wall (2E+5)	4E+5	2E-4	6E-7	-	-
	W, see $^{115}\text{Sb}$	-	5E+5	2E-4	7E-7	2E-3	2E-2
51 Antimony-120 (5.76 d)	D, see $^{115}\text{Sb}$	1E+3	2E+3	9E-7	3E-9	1E-5	1E-4
	W, see $^{115}\text{Sb}$	9E+2	1E+3	5E-7	2E-9	-	-
51 Antimony-122	D, see $^{115}\text{Sb}$	8E+2 LLI wall (8E+2)	2E+3	1E-6	3E-9	-	-
	W, see $^{115}\text{Sb}$	7E+2	1E+3	4E-7	2E-9	1E-5	1E-4
51 Antimony-124m <sup>2</sup>	D, see $^{115}\text{Sb}$	3E+5	8E+5	4E-4	1E-6	3E-3	3E-2
	W, see $^{115}\text{Sb}$	2E+5	6E+5	2E-4	8E-7	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average	
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)	
51	Antimony-124	D, see $^{115}\text{Sb}$ W, see $^{115}\text{Sb}$	6E+2 5E+2	9E+2 2E+2	4E-7 1E-7	1E-9 3E-10	7E-6 -	7E-5 -
51	Antimony-125	D, see $^{115}\text{Sb}$ W, see $^{115}\text{Sb}$	2E+3 -	2E+3 5E+2	1E-6 2E-7	3E-9 7E-10	3E-5 -	3E-4 -
51	Antimony-126m <sup>2</sup>	D, see $^{115}\text{Sb}$  W, see $^{115}\text{Sb}$	5E+4  (7E+4) -	2E+5 2E+5	8E-5 8E-5	3E-7 3E-7	- 9E-4	- 9E-3
51	Antimony-126	D, see $^{115}\text{Sb}$ W, see $^{115}\text{Sb}$	6E+2 5E+2	1E+3 5E+2	5E-7 2E-7	2E-9 7E-10	7E-6 -	7E-5 -
51	Antimony-127	D, see $^{115}\text{Sb}$  W, see $^{115}\text{Sb}$	8E+2  (8E+2) 7E+2	2E+3 2E+2	9E-7 4E-7	3E-9 1E-9	- -	- -
51	Antimony-128 <sup>2</sup> (10.4 min)	D, see $^{115}\text{Sb}$  W, see $^{115}\text{Sb}$	8E+4  (1E+5) -	4E+5 4E+5	2E-4 2E-4	5E-7 6E-7	- -	- -
51	Antimony-128	D, see $^{115}\text{Sb}$ (9.01 h) W, see $^{115}\text{Sb}$	1E+3 -	4E+3 3E+3	2E-6 1E-6	6E-9 5E-9	2E-5 -	2E-4 -
51	Antimony-129	D, see $^{115}\text{Sb}$ W, see $^{115}\text{Sb}$	3E+3 -	9E+3 9E+3	4E-6 4E-6	1E-8 1E-8	4E-5 -	4E-4 -
51	Antimony-130 <sup>2</sup>	D, see $^{115}\text{Sb}$ W, see $^{115}\text{Sb}$	2E+4 -	6E+4 8E+4	3E-5 3E-5	9E-8 1E-7	3E-4 -	3E-3 -
51	Antimony-131 <sup>2</sup>	D, see $^{115}\text{Sb}$  W, see $^{115}\text{Sb}$	1E+4  (2E+4) -	2E+4 (4E+4) 2E+4 (4E+4)	1E-5 - 1E-5 - 6E-8	- - -	- - -	- - -
52	Tellurium-116	D, all compounds except those given for W W, oxides, hydroxides, and nitrates	8E+3 -	2E+4 3E+4	9E-6 1E-5	3E-8 4E-8	1E-4 -	1E-3 -
52	Tellurium-121m	D, see $^{116}\text{Te}$  W, see $^{116}\text{Te}$	5E+2  (7E+2) -	2E+2 (4E+2) 4E+2	8E-8 - 2E-7	- 5E-10 6E-10	- 1E-5 -	- -
52	Tellurium-121	D, see $^{116}\text{Te}$ W, see $^{116}\text{Te}$	3E+3 -	4E+3 3E+3	2E-6 1E-6	6E-9 4E-9	4E-5 -	4E-4 -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DAC ( $\mu$ Ci/ml)	Col. 1	Col. 2	Monthly Average
			INHALATION		Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
52 Tellurium-123m	D, see $^{116}\text{Te}$	6E+2	2E+2	9E-8	-	-	-
	Bone surf (1E+3)	Bone surf (5E+2)	-	8E-10	1E-5	1E-4	
52 Tellurium-123	W, see $^{116}\text{Te}$	-	5E+2	2E-7	8E-10	-	-
	D, see $^{116}\text{Te}$	5E+2	2E+2	8E-8	-	-	-
52 Tellurium-125m	Bone surf (1E+3)	Bone surf (5E+2)	-	7E-10	2E-5	2E-4	
	W, see $^{116}\text{Te}$	-	4E+2	2E-7	-	-	-
	-	Bone surf (1E+3)	-	2E-9	-	-	-
52 Tellurium-127m	D, see $^{116}\text{Te}$	1E+3	4E+2	2E-7	-	-	-
	Bone surf (1E+3)	Bone surf (1E+3)	-	1E-9	2E-5	2E-4	
52 Tellurium-127	W, see $^{116}\text{Te}$	-	7E+2	3E-7	1E-9	-	-
	D, see $^{116}\text{Te}$	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
52 Tellurium-129m	W, see $^{116}\text{Te}$	-	2E+4	7E-6	2E-8	-	-
	D, see $^{116}\text{Te}$	5E+2	6E+2	3E-7	9E-10	7E-6	7E-5
52 Tellurium-129 <sup>2</sup>	W, see $^{116}\text{Te}$	-	2E+2	1E-7	3E-10	-	-
	D, see $^{116}\text{Te}$	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
52 Tellurium-131m	W, see $^{116}\text{Te}$	-	7E+4	3E-5	1E-7	-	-
	D, see $^{116}\text{Te}$	3E+2	4E+2	2E-7	-	-	-
	Thyroid (6E+2)	Thyroid (1E+3)	-	2E-9	8E-6	8E-5	
52 Tellurium-131 <sup>2</sup>	W, see $^{116}\text{Te}$	-	4E+2	2E-7	-	-	-
	D, see $^{116}\text{Te}$	-	9E+2	-	1E-9	-	-
	Thyroid (6E+3)	Thyroid (1E+4)	-	2E-8	8E-5	8E-4	
52 Tellurium-132	W, see $^{116}\text{Te}$	-	5E+3	2E-6	-	-	-
	D, see $^{116}\text{Te}$	3E+3	5E+3	2E-6	-	-	-
	Thyroid (7E+2)	Thyroid (8E+2)	-	1E-9	9E-6	9E-5	
52 Tellurium-132	W, see $^{116}\text{Te}$	-	2E+2	9E-8	-	-	-
	Thyroid (6E+2)	(6E+2)	-	9E-10	-	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DACP ( $\mu$ Ci/ml)	Col. 1	Col. 2	Monthly Average
		INHALATION			Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
52 Tellurium-133m <sup>2</sup>	D, see <sup>116</sup> Te	3E+3	5E+3	2E-6	-	-	-
		Thyroid (6E+3)	Thyroid (1E+4)	-	2E-8	9E-5	9E-4
		-	5E+3	2E-6	-	-	-
		-	Thyroid (1E+4)	-	2E-8	-	-
52 Tellurium-133 <sup>2</sup>	D, see <sup>116</sup> Te	1E+4	2E+4	9E-6	-	-	-
		Thyroid (3E+4)	Thyroid (6E+4)	-	8E-8	4E-4	4E-3
		-	2E+4	9E-6	-	-	-
		-	Thyroid (6E+4)	-	8E-8	-	-
52 Tellurium-134 <sup>2</sup>	D, see <sup>116</sup> Te	2E+4	2E+4	1E-5	-	-	-
		Thyroid (2E+4)	Thyroid (5E+4)	-	7E-8	3E-4	3E-3
		-	2E+4	1E-5	-	-	-
		-	Thyroid (5E+4)	-	7E-8	-	-
53 Iodine-120m <sup>2</sup>	D, all compounds	1E+4	2E+4	9E-6	3E-8	-	-
		Thyroid (1E+4)	-	-	-	2E-4	2E-3
53 Iodine-120 <sup>2</sup>	D, all compounds	4E+3	9E+3	4E-6	-	-	-
		Thyroid (8E+3)	Thyroid (1E+4)	-	2E-8	1E-4	1E-3
53 Iodine-121	D, all compounds	1E+4	2E+4	8E-6	-	-	-
		Thyroid (3E+4)	Thyroid (5E+4)	-	7E-8	4E-4	4E-3
53 Iodine-123	D, all compounds	3E+3	6E+3	3E-6	-	-	-
		Thyroid (1E+4)	Thyroid (2E+4)	-	2E-8	1E-4	1E-3
53 Iodine-124	D, all compounds	5E+1	8E+1	3E-8	-	-	-
		Thyroid (2E+2)	Thyroid (3E+2)	-	4E-10	2E-6	2E-5
53 Iodine-125	D, all compounds	4E+1	6E+1	3E-8	-	-	-
		Thyroid (1E+2)	Thyroid (2E+2)	-	3E-10	2E-6	2E-5
53 Iodine-126	D, all compounds	2E+1	4E+1	1E-8	-	-	-
		Thyroid (7E+1)	Thyroid (1E+2)	-	2E-10	1E-6	1E-5
53 Iodine-128 <sup>2</sup>	D, all compounds	4E+4	1E+5	5E-5	2E-7	-	-
		St wall (6E+4)	-	-	-	8E-4	8E-3

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
		ALI ( $\mu$ Ci)	DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)	
53 Iodine-129	D, all compounds	5E+0	9E+0	4E-9	-	-	-
		Thyroid (2E+1)	Thyroid (3E+1)	-	4E-11	2E-7	2E-6
53 Iodine-130	D, all compounds	4E+2	7E+2	3E-7	-	-	-
		Thyroid (1E+3)	Thyroid (2E+3)	-	3E-9	2E-5	2E-4
53 Iodine-131	D, all compounds	3E+1	5E+1	2E-8	-	-	-
		Thyroid (9E+1)	Thyroid (2E+2)	-	2E-10	1E-6	1E-5
53 Iodine-132m <sup>2</sup>	D, all compounds	4E+3	8E+3	4E-6	-	-	-
		Thyroid (1E+4)	Thyroid (2E+4)	-	3E-8	1E-4	1E-3
53 Iodine-132	D, all compounds	4E+3	8E+3	3E-6	-	-	-
		Thyroid (9E+3)	Thyroid (1E+4)	-	2E-8	1E-4	1E-3
53 Iodine-133	D, all compounds	1E+2	3E+2	1E-7	-	-	-
		Thyroid (5E+2)	Thyroid (9E+2)	-	1E-9	7E-6	7E-5
53 Iodine-134 <sup>2</sup>	D, all compounds	2E+4	5E+4	2E-5	6E-8	-	-
		Thyroid (3E+4)	-	-	-	4E-4	4E-3
53 Iodine-135	D, all compounds	8E+2	2E+3	7E-7	-	-	-
		Thyroid (3E+3)	Thyroid (4E+3)	-	6E-9	3E-5	3E-4
54 Xenon-120 <sup>2</sup>	Submersion <sup>1</sup>	-	-	1E-5	4E-8	-	-
54 Xenon-121 <sup>2</sup>	Submersion <sup>1</sup>	-	-	2E-6	1E-8	-	-
54 Xenon-122	Submersion <sup>1</sup>	-	-	7E-5	3E-7	-	-
54 Xenon-123	Submersion <sup>1</sup>	-	-	6E-6	3E-8	-	-
54 Xenon-125	Submersion <sup>1</sup>	-	-	2E-5	7E-8	-	-
54 Xenon-127	Submersion <sup>1</sup>	-	-	1E-5	6E-8	-	-
54 Xenon-129m	Submersion <sup>1</sup>	-	-	2E-4	9E-7	-	-
54 Xenon-131m	Submersion <sup>1</sup>	-	-	4E-4	2E-6	-	-
54 Xenon-133m	Submersion <sup>1</sup>	-	-	1E-4	6E-7	-	-
54 Xenon-133	Submersion <sup>1</sup>	-	-	1E-4	5E-7	-	-
54 Xenon-135m <sup>2</sup>	Submersion <sup>1</sup>	-	-	9E-6	4E-8	-	-
54 Xenon-135	Submersion <sup>1</sup>	-	-	1E-5	7E-8	-	-
54 Xenon-138 <sup>2</sup>	Submersion <sup>1</sup>	-	-	4E-6	2E-8	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
55 Cesium-125 <sup>2</sup>	D, all compounds	5E+4 St wall (9E+4)	1E+5	6E-5	2E-7	-	-
55 Cesium-127	D, all compounds	6E+4	9E+4	4E-5	1E-7	9E-4	9E-3
55 Cesium-129	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
55 Cesium-130 <sup>2</sup>	D, all compounds	6E+4 St wall (1E+5)	2E+5	8E-5	3E-7	-	-
55 Cesium-131	D, all compounds	2E+4	3E+4	1E-5	4E-8	3E-4	3E-3
55 Cesium-132	D, all compounds	3E+3	4E+3	2E-6	6E-9	4E-5	4E-4
55 Cesium-134m	D, all compounds	1E+5 St wall (1E+5)	1E+5	6E-5	2E-7	-	-
55 Cesium-134	D, all compounds	7E+1	1E+2	4E-8	2E-10	9E-7	9E-6
55 Cesium-135m <sup>2</sup>	D, all compounds	1E+5	2E+5	8E-5	3E-7	1E-3	1E-2
55 Cesium-135	D, all compounds	7E+2	1E+3	5E-7	2E-9	1E-5	1E-4
55 Cesium-136	D, all compounds	4E+2	7E+2	3E-7	9E-10	6E-6	6E-5
55 Cesium-137	D, all compounds	1E+2	2E+2	6E-8	2E-10	1E-6	1E-5
55 Cesium-138 <sup>2</sup>	D, all compounds	2E+4 St wall (3E+4)	6E+4	2E-5	8E-8	-	-
56 Barium-126 <sup>2</sup>	D, all compounds	6E+3	2E+4	6E-6	2E-8	8E-5	8E-4
56 Barium-128	D, all compounds	5E+2	2E+3	7E-7	2E-9	7E-6	7E-5
56 Barium-131m <sup>2</sup>	D, all compounds	4E+5 St wall (5E+5)	1E+6	6E-4	2E-6	-	-
56 Barium-131	D, all compounds	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
56 Barium-133m	D, all compounds	2E+3 LLI wall (3E+3)	9E+3	4E-6	1E-8	-	-
56 Barium-133	D, all compounds	2E+3	7E+2	3E-7	9E-10	2E-5	2E-4
56 Barium-135m	D, all compounds	3E+3	1E+4	5E-6	2E-8	4E-5	4E-4
56 Barium-139 <sup>2</sup>	D, all compounds	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
56 Barium-140	D, all compounds	5E+2 LLI wall (6E+2)	1E+3	6E-7	2E-9	-	-
56 Barium-141 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)	
				DAC ( $\mu$ Ci/ml)				
56	Barium-142 <sup>2</sup>	D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4	7E-3
57	Lanthanum-131 <sup>2</sup>	D, all compounds except those given for W W, oxides and hydroxides	5E+4 -	1E+5 2E+5	5E-5 7E-5	2E-7 2E-7	6E-4 -	6E-3 -
57	Lanthanum-132	D, see <sup>131</sup> La W, see <sup>131</sup> La	3E+3 -	1E+4 1E+4	4E-6 5E-6	1E-8 2E-8	4E-5 -	4E-4 -
57	Lanthanum-135	D, see <sup>131</sup> La W, see <sup>131</sup> La	4E+4 -	1E+5 9E+4	4E-5 4E-5	1E-7 1E-7	5E-4 -	5E-3 -
57	Lanthanum-137	D, see <sup>131</sup> La	1E+4	6E+1	3E-8	-	2E-4	2E-3
		Liver						
			-	(7E+1)	-	1E-10	-	-
			-	3E+2	1E-7	-	-	-
		Liver						
			-	(3E+2)	-	4E-10	-	-
57	Lanthanum-138	D, see <sup>131</sup> La W, see <sup>131</sup> La	9E+2 -	4E+0 1E+1	1E-9 6E-9	5E-12 2E-11	1E-5 -	1E-4 -
57	Lanthanum-140	D, see <sup>131</sup> La W, see <sup>131</sup> La	6E+2 -	1E+3 1E+3	6E-7 5E-7	2E-9 2E-9	9E-6 -	9E-5 -
57	Lanthanum-141	D, see <sup>131</sup> La W, see <sup>131</sup> La	4E+3 -	9E+3 1E+4	4E-6 5E-6	1E-8 2E-8	5E-5 -	5E-4 -
57	Lanthanum-142 <sup>2</sup>	D, see <sup>131</sup> La W, see <sup>131</sup> La	8E+3 -	2E+4 3E+4	9E-6 1E-5	3E-8 5E-8	1E-4 -	1E-3 -
57	Lanthanum-143 <sup>2</sup>	D, see <sup>131</sup> La	4E+4	1E+5	4E-5	1E-7	-	-
		St wall						
			(4E+4)	-	-	-	5E-4	5E-3
			-	9E+4	4E-5	1E-7	-	-
58	Cerium-134	W, all compounds except those given for Y	5E+2 (6E+2)	7E+2	3E-7	1E-9	-	-
		Y, oxides, hydroxides, and fluorides	-	7E+2	3E-7	9E-10	-	-
58	Cerium-135	W, see <sup>134</sup> Ce Y, see <sup>134</sup> Ce	2E+3 -	4E+3 4E+3	2E-6 1E-6	5E-9 5E-9	2E-5 -	2E-4 -
58	Cerium-137m	W, see <sup>134</sup> Ce	2E+3 (2E+3)	4E+3	2E-6 2E-6	6E-9 5E-9	-	-
		Y, see <sup>134</sup> Ce	-	4E+3	-	-	3E-5	3E-4

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
58	Cerium-137	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	5E+4 -	1E+5 1E+5	6E-5 5E-5	2E-7 2E-7	7E-4 -
58	Cerium-139	W, see $^{134}\text{Ce}$ Y, see $^{134}\text{Ce}$	5E+3 -	8E+2 7E+2	3E-7 3E-7	1E-9 9E-10	7E-5 -
58	Cerium-141	W, see $^{134}\text{Ce}$	2E+3 (2E+3)	7E+2 -	3E-7 -	1E-9 -	- -
		Y, see $^{134}\text{Ce}$	-	6E+2	2E-7	8E-10	- -
58	Cerium-143	W, see $^{134}\text{Ce}$	1E+3 (1E+3)	2E+3 -	8E-7 -	3E-9 -	- -
		Y, see $^{134}\text{Ce}$	-	2E+3	7E-7	2E-9	- -
58	Cerium-144	W, see $^{134}\text{Ce}$	2E+2 (3E+2)	3E+1 -	1E-8 -	4E-11 -	- -
		Y, see $^{134}\text{Ce}$	-	1E+1	6E-9	2E-11	- -
59	Praseodymium-136 <sup>2</sup>	W, all compounds except those given for Y	5E+4 (7E+4)	2E+5 -	1E-4 -	3E-7 -	- -
		Y, oxides, hydroxides, carbides, and fluorides	-	2E+5	9E-5	3E-7 -	1E-3 -
59	Praseodymium-137 <sup>2</sup>	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	4E+4 -	2E+5 1E+5	6E-5 6E-5	2E-7 2E-7	5E-4 -
59	Praseodymium-138m	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	1E+4 -	5E+4 4E+4	2E-5 2E-5	8E-8 6E-8	1E-4 -
59	Praseodymium-139	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	4E+4 -	1E+5 1E+5	5E-5 5E-5	2E-7 2E-7	6E-4 -
59	Praseodymium-142m <sup>2</sup>	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	8E+4 -	2E+5 1E+5	7E-5 6E-5	2E-7 2E-7	1E-3 -
59	Praseodymium-142	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	1E+3 -	2E+3 2E+3	9E-7 8E-7	3E-9 3E-9	1E-5 -
59	Praseodymium-143	W, see $^{136}\text{Pr}$	9E+2 (1E+3)	8E+2 -	3E-7 -	1E-9 -	- -
		Y, see $^{136}\text{Pr}$	-	7E+2	3E-7	9E-10	2E-5 -
59	Praseodymium-144 <sup>2</sup>	W, see $^{136}\text{Pr}$	3E+4 (4E+4)	1E+5 -	5E-5 -	2E-7 -	- -
		Y, see $^{136}\text{Pr}$	-	1E+5	5E-5	2E-7	6E-4 -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 INHALATION ALI ( $\mu\text{Ci}$ )	Col. 1 Air ( $\mu\text{Ci}/\text{ml}$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average
			DAC ( $\mu\text{Ci}/\text{ml}$ )				Concentration ( $\mu\text{Ci}/\text{ml}$ )
59	Praseodymium-145	W, see $^{136}\text{Pr}$ Y, see $^{136}\text{Pr}$	3E+3 -	9E+3 8E+3	4E-6 3E-6	1E-8 1E-8	4E-5 -
59	Praseodymium-147 <sup>2</sup>	W, see $^{136}\text{Pr}$  Y, see $^{136}\text{Pr}$	5E+4 St wall (8E+4)	2E+5 -	8E-5 -	3E-7 -	- -
60	Neodymium-136 <sup>2</sup>	W, all compounds except those given for Y  Y, oxides, hydroxides, carbides, and fluorides	1E+4 -	6E+4 5E+4	2E-5 2E-5	8E-8 8E-8	2E-4 -
60	Neodymium-138	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	2E+3 -	6E+3 5E+3	3E-6 2E-6	9E-9 7E-9	3E-5 -
60	Neodymium-139m	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	5E+3 -	2E+4 1E+4	7E-6 6E-6	2E-8 2E-8	7E-5 -
60	Neodymium-139 <sup>2</sup>	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	9E+4 -	3E+5 3E+5	1E-4 1E-4	5E-7 4E-7	1E-3 -
60	Neodymium-141	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	2E+5 -	7E+5 6E+5	3E-4 3E-4	1E-6 9E-7	2E-3 -
60	Neodymium-147	W, see $^{136}\text{Nd}$  Y, see $^{136}\text{Nd}$	1E+3 LLI wall (1E+3) -	9E+2 8E+2	4E-7 4E-7	1E-9 1E-9	- 2E-5
60	Neodymium-149 <sup>2</sup>	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	1E+4 -	3E+4 2E+4	1E-5 1E-5	4E-8 3E-8	1E-4 -
60	Neodymium-151 <sup>2</sup>	W, see $^{136}\text{Nd}$ Y, see $^{136}\text{Nd}$	7E+4 -	2E+5 2E+5	8E-5 8E-5	3E-7 3E-7	9E-4 -
61	Promethium-141 <sup>2</sup>	W, all compounds except those given for Y  Y, oxides, hydroxides, carbides, and fluorides	5E+4 St wall (6E+4) -	2E+5 -	8E-5 -	3E-7 -	- -
61	Promethium-143	W, see $^{141}\text{Pm}$ Y, see $^{141}\text{Pm}$	5E+3 -	6E+2 7E+2	2E-7 3E-7	8E-10 1E-9	7E-5 -
61	Promethium-144	W, see $^{141}\text{Pm}$ Y, see $^{141}\text{Pm}$	1E+3 -	1E+2 1E+2	5E-8 5E-8	2E-10 2E-10	2E-5 -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
				DAC ( $\mu$ Ci/ml)			Concentration ( $\mu$ Ci/ml)
61 Promethium-145	W, see $^{141}\text{Pm}$	1E+4	2E+2 Bone surf	7E-8	-	1E-4	1E-3
	Y, see $^{141}\text{Pm}$	-	(2E+2)	-	3E-10	-	-
61 Promethium-146	W, see $^{141}\text{Pm}$	2E+3	5E+1	2E-8	7E-11	2E-5	2E-4
	Y, see $^{141}\text{Pm}$	-	4E+1	2E-8	6E-11	-	-
61 Promethium-147	W, see $^{141}\text{Pm}$	4E+3 LLI wall	1E+2 Bone surf	5E-8	-	-	-
	Y, see $^{141}\text{Pm}$	(5E+3)	(2E+2)	-	3E-10	7E-5	7E-4
61 Promethium-148m	W, see $^{141}\text{Pm}$	7E+2	3E+2	1E-7	4E-10	1E-5	1E-4
	Y, see $^{141}\text{Pm}$	-	3E+2	1E-7	5E-10	-	-
61 Promethium-148	W, see $^{141}\text{Pm}$	4E+2 LLI wall	5E+2	2E-7	8E-10	-	-
	Y, see $^{141}\text{Pm}$	(5E+2)	-	-	7E-6	7E-5	-
61 Promethium-149	W, see $^{141}\text{Pm}$	1E+3 LLI wall	2E+3	8E-7	3E-9	-	-
	Y, see $^{141}\text{Pm}$	(1E+3)	-	-	2E-5	2E-4	-
61 Promethium-150	W, see $^{141}\text{Pm}$	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
	Y, see $^{141}\text{Pm}$	-	2E+4	7E-6	2E-8	-	-
61 Promethium-151	W, see $^{141}\text{Pm}$	2E+3	4E+3	1E-6	5E-9	2E-5	2E-4
	Y, see $^{141}\text{Pm}$	-	3E+3	1E-6	4E-9	-	-
62 Samarium-141m <sup>2</sup>	W, all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
62 Samarium-141 <sup>2</sup>	W, all compounds	5E+4 St wall	2E+5	8E-5	2E-7	-	-
		(6E+4)	-	-	-	8E-4	8E-3
62 Samarium-142 <sup>2</sup>	W, all compounds	8E+3	3E+4	1E-5	4E-8	1E-4	1E-3
62 Samarium-145	W, all compounds	6E+3	5E+2	2E-7	7E-10	8E-5	8E-4
62 Samarium-146	W, all compounds	1E+1 Bone surf	4E-2 Bone surf	1E-11	-	-	-
		(3E+1)	(6E-2)	-	9E-14	3E-7	3E-6
62 Samarium-147	W, all compounds	2E+1 Bone surf	4E-2 Bone surf	2E-11	-	-	-
		(3E+1)	(7E-2)	-	1E-13	4E-7	4E-6
62 Samarium-151	W, all compounds	1E+4 LLI wall	1E+2 Bone surf	4E-8	-	-	-
		(1E+4)	(2E+2)	-	2E-10	2E-4	2E-3

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average
		ALI ( $\mu\text{Ci}$ )	ALI ( $\mu\text{Ci}$ )	DAC ( $\mu\text{Ci}/\text{ml}$ )	Air ( $\mu\text{Ci}/\text{ml}$ )	Water ( $\mu\text{Ci}/\text{ml}$ )	
62 Samarium-153	W, all compounds	2E+3 LLI wall (2E+3)	3E+3	1E-6	4E-9	-	-
62 Samarium-155 <sup>2</sup>	W, all compounds	6E+4 St wall (8E+4)	2E+5	9E-5	3E-7	-	-
62 Samarium-156	W, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
63 Europium-145	W, all compounds	2E+3	2E+3	8E-7	3E-9	2E-5	2E-4
63 Europium-146	W, all compounds	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
63 Europium-147	W, all compounds	3E+3	2E+3	7E-7	2E-9	4E-5	4E-4
63 Europium-148	W, all compounds	1E+3	4E+2	1E-7	5E-10	1E-5	1E-4
63 Europium-149	W, all compounds	1E+4	3E+3	1E-6	4E-9	2E-4	2E-3
63 Europium-150 (12.62 h)	W, all compounds	3E+3	8E+3	4E-6	1E-8	4E-5	4E-4
63 Europium-150 (34.2 y)	W, all compounds	8E+2	2E+1	8E-9	3E-11	1E-5	1E-4
63 Europium-152m	W, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
63 Europium-152	W, all compounds	8E+2	2E+1	1E-8	3E-11	1E-5	1E-4
63 Europium-154	W, all compounds	5E+2	2E+1	8E-9	3E-11	7E-6	7E-5
63 Europium-155	W, all compounds	4E+3	9E+1 Bone surf (1E+2)	4E-8	-	5E-5	5E-4
63 Europium-156	W, all compounds	6E+2	5E+2	2E-7	6E-10	8E-6	8E-5
63 Europium-157	W, all compounds	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
63 Europium-158 <sup>2</sup>	W, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
64 Gadolinium-145 <sup>2</sup>	D, all compounds except those given for W	5E+4 St wall (5E+4)	2E+5	6E-5	2E-7	-	-
	W, oxides, hydroxides, and fluorides	-	2E+5	7E-5	2E-7	-	-
64 Gadolinium-146	D, see <sup>145</sup> Gd W, see <sup>145</sup> Gd	1E+3 -	1E+2 3E+2	5E-8 1E-7	2E-10 4E-10	2E-5 -	2E-4 -
64 Gadolinium-147	D, see <sup>145</sup> Gd W, see <sup>145</sup> Gd	2E+3 -	4E+3 4E+3	2E-6 1E-6	6E-9 5E-9	3E-5 -	3E-4 -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
64   Gadolinium-148	D, see $^{145}\text{Gd}$	1E+1	8E+3	3E-12	-	-	-
		Bone surf (2E+1)	Bone surf (2E+2)	-	2E-14	3E-7	3E-6
	W, see $^{145}\text{Gd}$	-	3E-2	1E-11	-	-	-
		-	Bone surf (6E-2)	-	8E-14	-	-
64   Gadolinium-149	D, see $^{145}\text{Gd}$	3E+3	2E+3	9E-7	3E-9	4E-5	4E-4
	W, see $^{145}\text{Gd}$	-	2E+3	1E-6	3E-9	-	-
64   Gadolinium-151	D, see $^{145}\text{Gd}$	6E+3	4E+2	2E-7	-	9E-5	9E-4
		Bone surf -	Bone surf (6E+2)	-	9E-10	-	-
	W, see $^{145}\text{Gd}$	-	1E+3	5E-7	2E-9	-	-
		-	Bone surf (8E-2)	-	1E-13	-	-
64   Gadolinium-153	D, see $^{145}\text{Gd}$	5E+3	1E+2	6E-8	-	6E-5	6E-4
		Bone surf -	Bone surf (2E+2)	-	3E-10	-	-
	W, see $^{145}\text{Gd}$	-	6E+2	2E-7	8E-10	-	-
		-	Bone surf -	-	-	-	-
64   Gadolinium-159	D, see $^{145}\text{Gd}$	3E+3	8E+3	3E-6	1E-8	4E-5	4E-4
	W, see $^{145}\text{Gd}$	-	6E+3	2E-6	8E-9	-	-
65   Terbium-147 <sup>2</sup>	W, all compounds	9E+3	3E+4	1E-5	5E-8	1E-4	1E-3
65   Terbium-149	W, all compounds	5E+3	7E+2	3E-7	1E-9	7E-5	7E-4
65   Terbium-150	W, all compounds	5E+3	2E+4	9E-6	3E-8	7E-5	7E-4
65   Terbium-151	W, all compounds	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
65   Terbium-153	W, all compounds	5E+3	7E+3	3E-6	1E-8	7E-5	7E-4
65   Terbium-154	W, all compounds	2E+3	4E+3	2E-6	6E-9	2E-5	2E-4
65   Terbium-155	W, all compounds	6E+3	8E+3	3E-6	1E-8	8E-5	8E-4
65   Terbium-156m (5.0 h)	W, all compounds	2E+4	3E+4	1E-5	4E-8	2E-4	2E-3
65   Terbium-156m (24.4 h)	W, all compounds	7E+3	8E+3	3E-6	1E-8	1E-4	1E-3
65   Terbium-156	W, all compounds	1E+3	1E+3	6E-7	2E-9	1E-5	1E-4
65   Terbium-157	W, all compounds	5E+4	3E+2	1E-7	-	-	-
		LLI wall (5E+4)	Bone surf (6E+2)	-	8E-10	7E-4	7E-3

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DAC ( $\mu$ Ci/ml)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average	
			INHALATION					
		ALI ( $\mu$ Ci)	ALI ( $\mu$ Ci)	DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)	
65	Terbium-158	W, all compounds	1E+3	2E+1	8E-9	3E-11	2E-5	2E-4
65	Terbium-160	W, all compounds	8E+2	2E+2	9E-8	3E-10	1E-5	1E-4
65	Terbium-161	W, all compounds	2E+3 LLI wall (2E+3)	2E+3	7E-7	2E-9	-	-
66	Dysprosium-155	W, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
66	Dysprosium-157	W, all compounds	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
66	Dysprosium-159	W, all compounds	1E+4	2E+3	1E-6	3E-9	2E-4	2E-3
66	Dysprosium-165	W, all compounds	1E+4	5E+4	2E-5	6E-8	2E-4	2E-3
66	Dysprosium-166	W, all compounds	6E+2 LLI wall (8E+2)	7E+2	3E-7	1E-9	-	-
67	Holmium-155 <sup>2</sup>	W, all compounds	4E+4	2E+5	6E-5	2E-7	6E-4	6E-3
67	Holmium-157 <sup>2</sup>	W, all compounds	3E+5	1E+6	6E-4	2E-6	4E-3	4E-2
67	Holmium-159 <sup>2</sup>	W, all compounds	2E+5	1E+6	4E-4	1E-6	3E-3	3E-2
67	Holmium-161	W, all compounds	1E+5	4E+5	2E-4	6E-7	1E-3	1E-2
67	Holmium-162m <sup>2</sup>	W, all compounds	5E+4	3E+5	1E-4	4E-7	7E-4	7E-3
67	Holmium-162 <sup>2</sup>	W, all compounds	5E+5 St wall (8E+5)	2E+6	1E-3	3E-6	-	-
67	Holmium-164m <sup>2</sup>	W, all compounds	1E+5	3E+5	1E-4	4E-7	1E-3	1E-2
67	Holmium-164 <sup>2</sup>	W, all compounds	2E+5 St wall (2E+5)	6E+5	3E-4	9E-7	-	-
67	Holmium-166m	W, all compounds	6E+2	7E+0	3E-9	9E-12	9E-6	9E-5
67	Holmium-166	W, all compounds	9E+2 LLI wall (9E+2)	2E+3	7E-7	2E-9	-	-
67	Holmium-167	W, all compounds	2E+4	6E+4	2E-5	8E-8	2E-4	2E-3
68	Erbium-161	W, all compounds	2E+4	6E+4	3E-5	9E-8	2E-4	2E-3
68	Erbium-165	W, all compounds	6E+4	2E+5	8E-5	3E-7	9E-4	9E-3
68	Erbium-169	W, all compounds	3E+3 LLI wall (4E+3)	3E+3	1E-6	4E-9	-	-
68	Erbium-171	W, all compounds	4E+3	1E+4	4E-6	1E-8	5E-5	5E-4
68	Erbium-172	W, all compounds	1E+3 LLI wall (E+3)	1E+3	6E-7	2E-9	-	-
						2E-5	2E-4	

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
69 Thulium-162 <sup>2</sup>	W, all compounds	7E+4 St wall (7E+4)	3E+5	1E-4	4E-7	-	-
		-	-	-	-	1E-3	1E-2
69 Thulium-166	W, all compounds	4E+3	1E+4	6E-6	2E-8	6E-5	6E-4
69 Thulium-167	W, all compounds	2E+3 LLI wall (2E+3)	2E+3	8E-7	3E-9	-	-
		-	-	-	-	3E-5	3E-4
69 Thulium-170	W, all compounds	8E+2 LLI wall (1E+3)	2E+2	9E-8	3E-10	-	-
		-	-	-	-	1E-5	1E-4
69 Thulium-171	W, all compounds	1E+4 LLI wall (1E+4)	3E+2 (6E+2)	1E-7	-	-	-
		-	-	-	8E-10	2E-4	2E-3
69 Thulium-172	W, all compounds	7E+2 LLI wall (8E+2)	1E+3	5E-7	2E-9	-	-
		-	-	-	-	1E-5	1E-4
69 Thulium-173	W, all compounds	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
69 Thulium-175 <sup>2</sup>	W, all compounds	7E+4 St wall (9E+4)	3E+5	1E-4	4E-7	-	-
		-	-	-	-	1E-3	1E-2
70 Ytterbium-162 <sup>2</sup>	W, all compounds except those given for Y Y, oxides, hydroxides, and fluorides	7E+4	3E+5	1E-4	4E-7	1E-3	1E-2
		-	3E+5	1E-4	4E-7	-	-
70 Ytterbium-166	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	1E+3	2E+3	8E-7	3E-9	2E-5	2E-4
		-	2E+3	8E-7	3E-9	-	-
70 Ytterbium-167 <sup>2</sup>	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	3E+5	8E+5	3E-4	1E-6	4E-3	4E-2
		-	7E+5	3E-4	1E-6	-	-
70 Ytterbium-169	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	2E+3	8E+2	4E-7	1E-9	2E-5	2E-4
		-	7E+2	3E-7	1E-9	-	-
70 Ytterbium-175	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	3E+3 LLI wall (3E+3)	4E+3	1E-6	5E-9	-	-
		-	3E+3	1E-6	5E-9	4E-5	4E-4
70 Ytterbium-177 <sup>2</sup>	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	2E+4	5E+4	2E-5	7E-8	2E-4	2E-3
		-	5E+4	2E-5	6E-8	-	-
70 Ytterbium-178 <sup>2</sup>	W, see <sup>162</sup> Yb Y, see <sup>162</sup> Yb	1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		-	4E+4	2E-5	5E-8	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
		DAC ( $\mu$ Ci/ml)					
71 Lutetium-169	W, all compounds except those given for Y Y, oxides, hydroxides, and fluorides	3E+3	4E+3	2E-6	6E-9	3E-5	3E-4
		-	4E+3	2E-6	6E-9	-	-
71 Lutetium-170	W, see $^{169}\text{Lu}$ Y, see $^{169}\text{Lu}$	1E+3	2E+3	9E-7	3E-9	2E-5	2E-4
71 Lutetium-171	W, see $^{169}\text{Lu}$ Y, see $^{169}\text{Lu}$	2E+3	2E+3	8E-7	3E-9	-	-
71 Lutetium-172	W, see $^{169}\text{Lu}$ Y, see $^{169}\text{Lu}$	1E+3	1E+3	5E-7	2E-9	1E-5	1E-4
71 Lutetium-173	W, see $^{169}\text{Lu}$  Y, see $^{169}\text{Lu}$	5E+3	3E+2	1E-7	-	7E-5	7E-4
		-	(5E+2)	-	6E-10	-	-
		-	3E+2	1E-7	4E-10	-	-
71 Lutetium-174m	W, see $^{169}\text{Lu}$  Y, see $^{169}\text{Lu}$	2E+3	2E+2	1E-7	-	-	-
		(3E+3)	(3E+2)	-	5E-10	4E-5	4E-4
		-	2E+2	9E-8	3E-10	-	-
71 Lutetium-174	W, see $^{169}\text{Lu}$  Y, see $^{169}\text{Lu}$	5E+3	1E+2	5E-8	-	7E-5	7E-4
		-	(2E+2)	-	3E-10	-	-
		-	2E+2	6E-8	2E-10	-	-
71 Lutetium-176m	W, see $^{169}\text{Lu}$ Y, see $^{169}\text{Lu}$	8E+3	3E+4	1E-5	3E-8	1E-4	1E-3
		-	2E+4	9E-6	3E-8	-	-
71 Lutetium-176	W, see $^{169}\text{Lu}$  Y, see $^{169}\text{Lu}$	7E+2	5E+0	2E-9	-	1E-5	1E-4
		-	(1E+1)	-	2E-11	-	-
		-	8E+0	3E-9	1E-11	-	-
71 Lutetium-177m	W, see $^{169}\text{Lu}$  Y, see $^{169}\text{Lu}$	7E+2	1E+2	5E-8	-	1E-5	1E-4
		-	(1E+2)	-	2E-10	-	-
		-	8E+1	3E-8	1E-10	-	-
71 Lutetium-177	W, see $^{169}\text{Lu}$  Y, see $^{169}\text{Lu}$	2E+3	2E+3	9E-7	3E-9	-	-
		(3E+3)	-	-	-	4E-5	4E-4
		-	2E+3	9E-7	3E-9	-	-
71 Lutetium-178m <sup>2</sup>	W, see $^{169}\text{Lu}$  Y, see $^{169}\text{Lu}$	5E+4	2E+5	8E-5	3E-7	-	-
		(6E+4)	-	-	-	8E-4	8E-3
		-	2E+5	7E-5	2E-7	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
71 Lutetium-178 <sup>2</sup>	W, see <sup>169</sup> Lu	4E+4 St wall (4E+4)	1E+5	5E-5	2E-7	-	-
	Y, see <sup>169</sup> Lu	-	1E+5	5E-5	2E-7	-	-
71 Lutetium-179	W, see <sup>169</sup> Lu	6E+3	2E+4	8E-6	3E-8	9E-5	9E-4
	Y, see <sup>169</sup> Lu	-	2E+4	6E-6	3E-8	-	-
72 Hafnium-170	D, all compounds except those given for W	3E+3	6E+3	2E-6	8E-9	4E-5	4E-4
	W, oxides, hydroxides, carbides, and nitrates	-	5E+3	2E-6	6E-9	-	-
72 Hafnium-172	D, see <sup>170</sup> Hf	1E+3	9E+0	4E-9	-	2E-5	2E-4
		-	(2E+1)	-	3E-11	-	-
72 Hafnium-173	W, see <sup>170</sup> Hf	-	4E+1	2E-8	-	-	-
		-	(6E+1)	-	8E-11	-	-
72 Hafnium-175	D, see <sup>170</sup> Hf	3E+3	9E+2	4E-7	-	4E-5	4E-4
	W, see <sup>170</sup> Hf	-	(1E+3)	-	1E-9	-	-
72 Hafnium-177m <sup>2</sup>	D, see <sup>170</sup> Hf	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
	W, see <sup>170</sup> Hf	-	9E+4	4E-5	1E-7	-	-
72 Hafnium-178m	D, see <sup>170</sup> Hf	3E+2	1E+0	5E-10	-	3E-6	3E-5
	W, see <sup>170</sup> Hf	-	(2E+0)	-	3E-12	-	-
72 Hafnium-179m	D, see <sup>170</sup> Hf	1E+3	3E+2	1E-7	-	1E-5	1E-4
	W, see <sup>170</sup> Hf	-	(6E+2)	-	8E-10	-	-
72 Hafnium-180m	D, see <sup>170</sup> Hf	7E+3	2E+4	9E-6	3E-8	1E-4	1E-3
	W, see <sup>170</sup> Hf	-	3E+4	1E-5	4E-8	-	-
72 Hafnium-181	D, see <sup>170</sup> Hf	1E+3	2E+2	7E-8	-	2E-5	2E-4
	W, see <sup>170</sup> Hf	-	(4E+2)	-	6E-10	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DAC ( $\mu$ Ci/ml)	Col. 1	Col. 2	Monthly Average
			INHALATION		Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
72	Hafnium-182m <sup>2</sup>	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	4E+4 - -	9E+4 1E+5	4E-5 6E-5	1E-7 2E-7	5E-4 - -
72	Hafnium-182	D, see <sup>170</sup> Hf  W, see <sup>170</sup> Hf	2E+2  Bone surf (4E+2) - -	8E-1 Bone surf (2E+0) 3E+0	3E-10 - 1E-9	- 2E-12	- 5E-6
72	Hafnium-183 <sup>2</sup>	D, see <sup>170</sup> Hf W, see <sup>170</sup> Hf	2E+4 - -	5E+4 6E+4	2E-5 2E-5	6E-8 8E-8	3E-4 - -
73	Tantalum-172 <sup>2</sup>	W, all compounds except those given for Y Y, elemental Ta, oxides, hydroxides, halides, carbides, nitrates, and nitrides	4E+4 - -	1E+5 1E+5	5E-5 4E-5	2E-7 1E-7	5E-4 - -
73	Tantalum-173	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	7E+3 - -	2E+4 2E+4	8E-6 7E-6	3E-8 2E-8	9E-5 - -
73	Tantalum-174 <sup>2</sup>	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	3E+4 - -	1E+5 9E+4	4E-5 4E-5	1E-7 1E-7	4E-4 - -
73	Tantalum-175	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	6E+3 - -	2E+4 1E+4	7E-6 6E-6	2E-8 2E-8	8E-5 - -
73	Tantalum-176	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	4E+3 - -	1E+4 1E+4	5E-6 5E-6	2E-8 2E-8	5E-5 - -
73	Tantalum-177	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	1E+4 - -	2E+4 2E+4	8E-6 7E-6	3E-8 2E-8	2E-4 - -
73	Tantalum-178	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	2E+4 - -	9E+4 7E+4	4E-5 3E-5	1E-7 1E-7	2E-4 - -
73	Tantalum-179	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	2E+4 - -	5E+3 9E+2	2E-6 4E-7	8E-9 1E-9	3E-4 - -
73	Tantalum-180m	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	2E+4 - -	7E+4 6E+4	3E-5 2E-5	9E-8 8E-8	3E-4 - -
73	Tantalum-180	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	1E+3 - -	4E+2 2E+1	2E-7 1E-8	6E-10 3E-11	2E-5 - -
73	Tantalum-182m <sup>2</sup>	W, see <sup>172</sup> Ta  Y, see <sup>172</sup> Ta	2E+5  St wall (2E+5) - -	5E+5 4E+5	2E-4 2E-4	8E-7 6E-7	- 3E-3
73	Tantalum-182	W, see <sup>172</sup> Ta Y, see <sup>172</sup> Ta	8E+2 - -	3E+2 1E+2	1E-7 6E-8	5E-10 2E-10	1E-5 - -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
73 Tantalum-183	W, see $^{172}\text{Ta}$	9E+2 LLI wall (1E+3)	1E+3	5E-7	2E-9	-	-
		Y, see $^{172}\text{Ta}$	-	1E+3	4E-7	1E-9	2E-5 2E-4
73 Tantalum-184	W, see $^{172}\text{Ta}$	2E+3	5E+3	2E-6	8E-9	3E-5	3E-4
		Y, see $^{172}\text{Ta}$	-	5E+3	2E-6	7E-9	-
73 Tantalum-185 <sup>2</sup>	W, see $^{172}\text{Ta}$	3E+4	7E+4	3E-5	1E-7	4E-4	4E-3
		Y, see $^{172}\text{Ta}$	-	6E+4	3E-5	9E-8	-
73 Tantalum-186 <sup>2</sup>	W, see $^{172}\text{Ta}$	5E+4 St wall (7E+4)	2E+5	1E-4	3E-7	-	-
		Y, see $^{172}\text{Ta}$	-	2E+5	9E-5	3E-7	1E-3 1E-2
74 Tungsten-176	D, all compounds	1E+4	5E+4	2E-5	7E-8	1E-4	1E-3
74 Tungsten-177	D, all compounds	2E+4	9E+4	4E-5	1E-7	3E-4	3E-3
74 Tungsten-178	D, all compounds	5E+3	2E+4	8E-6	3E-8	7E-5	7E-4
74 Tungsten-179 <sup>2</sup>	D, all compounds	5E+5	2E+6	7E-4	2E-6	7E-3	7E-2
74 Tungsten-181	D, all compounds	2E+4	3E+4	1E-5	5E-8	2E-4	2E-3
74 Tungsten-185	D, all compounds	2E+3 LLI wall (3E+3)	7E+3	3E-6	9E-9	-	-
		-	-	-	-	4E-5	4E-4
74 Tungsten-187	D, all compounds	2E+3	9E+3	4E-6	1E-8	3E-5	3E-4
74 Tungsten-188	D, all compounds	4E+2 LLI wall (5E+2)	1E+3	5E-7	2E-9	-	-
		-	-	-	-	7E-6	7E-5
75 Rhenium-177 <sup>2</sup>	D, all compounds except those given for W	9E+4 St wall (1E+5)	3E+5	1E-4	4E-7	-	-
		W, oxides, hydroxides, and nitrates	-	4E+5	1E-4	5E-7	-
75 Rhenium-178 <sup>2</sup>	D, see $^{177}\text{Re}$	7E+4 St wall (1E+5)	3E+5	1E-4	4E-7	-	-
		W, see $^{177}\text{Re}$	-	3E+5	1E-4	4E-7	1E-3 1E-2
75 Rhenium-181	D, see $^{177}\text{Re}$	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
		W, see $^{177}\text{Re}$	-	9E+3	4E-6	1E-8	-
75 Rhenium-182 (12.7 h)	D, see $^{177}\text{Re}$	7E+3	1E+4	5E-6	2E-8	9E-5	9E-4
		W, see $^{177}\text{Re}$	-	2E+4	6E-6	2E-8	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
			DAC ( $\mu$ Ci/ml)				Concentration ( $\mu$ Ci/ml)
75 Rhenium-182 (64.0 h)	D, see $^{177}\text{Re}$ W, see $^{177}\text{Re}$	1E+3 -	2E+3 2E+3	1E-6 9E-7	3E-9 3E-9	2E-5 -	2E-4 -
75 Rhenium-184m	D, see $^{177}\text{Re}$ W, see $^{177}\text{Re}$	2E+3 -	3E+3 4E+2	1E-6 2E-7	4E-9 6E-10	3E-5 -	3E-4 -
75 Rhenium-184	D, see $^{177}\text{Re}$ W, see $^{177}\text{Re}$	2E+3 -	4E+3 1E+3	1E-6 6E-7	5E-9 2E-9	3E-5 -	3E-4 -
75 Rhenium-186m	D, see $^{177}\text{Re}$  W, see $^{177}\text{Re}$	1E+3  (2E+3) -	2E+3 (2E+3) 2E+2	7E-7 - 6E-8	- 3E-9 2E-10	- 2E-5 -	- 2E-4 -
75 Rhenium-186	D, see $^{177}\text{Re}$ W, see $^{177}\text{Re}$	2E+3 -	3E+3 2E+3	1E-6 7E-7	4E-9 2E-9	3E-5 -	3E-4 -
75 Rhenium-187	D, see $^{177}\text{Re}$  W, see $^{177}\text{Re}$	6E+5  (9E+5) -	8E+5 - 1E+5	4E-4 - 4E-5	- 1E-6 1E-7	8E-3 - -	8E-2 - -
75 Rhenium-188m <sup>2</sup>	D, see $^{177}\text{Re}$ W, see $^{177}\text{Re}$	8E+4 -	1E+5 1E+5	6E-5 6E-5	2E-7 2E-7	1E-3 -	1E-2 -
75 Rhenium-188	D, see $^{177}\text{Re}$ W, see $^{177}\text{Re}$	2E+3 -	3E+3 3E+3	1E-6 1E-6	4E-9 4E-9	2E-5 -	2E-4 -
75 Rhenium-189	D, see $^{177}\text{Re}$ W, see $^{177}\text{Re}$	3E+3 -	5E+3 4E+3	2E-6 2E-6	7E-9 6E-9	4E-5 -	4E-4 -
76 Osmium-180 <sup>2</sup>	D, all compounds except those given for W and Y W, halides and nitrates Y, oxides and hydroxides	1E+5 - -	4E+5 5E+5 5E+5	2E-4 2E-4 2E-4	5E-7 7E-7 6E-7	1E-3 - -	1E-2 - -
76 Osmium-181 <sup>2</sup>	D, see $^{180}\text{Os}$ W, see $^{180}\text{Os}$ Y, see $^{180}\text{Os}$	1E+4 - -	4E+4 5E+4 4E+4	2E-5 2E-5 2E-5	6E-8 6E-8 6E-8	2E-4 - -	2E-3 - -
76 Osmium-182	D, see $^{180}\text{Os}$ W, see $^{180}\text{Os}$ Y, see $^{180}\text{Os}$	2E+3 - -	6E+3 4E+3 4E+3	2E-6 2E-6 2E-6	8E-9 6E-9 6E-9	3E-5 - -	3E-4 - -
76 Osmium-185	D, see $^{180}\text{Os}$ W, see $^{180}\text{Os}$ Y, see $^{180}\text{Os}$	2E+3 - -	5E+2 8E+2 8E+2	2E-7 3E-7 3E-7	7E-10 1E-9 1E-9	3E-5 - -	3E-4 - -
76 Osmium-189m	D, see $^{180}\text{Os}$ W, see $^{180}\text{Os}$ Y, see $^{180}\text{Os}$	8E+4 - -	2E+5 2E+5 2E+5	1E-4 9E-5 7E-5	3E-7 3E-7 2E-7	1E-3 - -	1E-2 - -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
76 Osmium-191m	D, see $^{180}\text{Os}$	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3
	W, see $^{180}\text{Os}$	-	2E+4	8E-6	3E-8	-	-
	Y, see $^{180}\text{Os}$	-	2E+4	7E-6	2E-8	-	-
76 Osmium-191	D, see $^{180}\text{Os}$	2E+3 LLI wall (3E+3)	2E+3	9E-7	3E-9	-	-
	W, see $^{180}\text{Os}$	-	2E+3	7E-7	2E-9	-	-
	Y, see $^{180}\text{Os}$	-	1E+3	6E-7	2E-9	-	-
76 Osmium-193	D, see $^{180}\text{Os}$	2E+3 LLI wall (2E+3)	5E+3	2E-6	6E-9	-	-
	W, see $^{180}\text{Os}$	-	3E+3	1E-6	4E-9	-	-
	Y, see $^{180}\text{Os}$	-	3E+3	1E-6	4E-9	-	-
76 Osmium-194	D, see $^{180}\text{Os}$	4E+2 LLI wall (6E+2)	4E+1	2E-8	6E-11	-	-
	W, see $^{180}\text{Os}$	-	6E+1	2E-8	8E-11	-	-
	Y, see $^{180}\text{Os}$	-	8E+0	3E-9	1E-11	-	-
77 Iridium-182 <sup>2</sup>	D, all compounds except those given for W and Y	4E+4 St wall (4E+4)	1E+5	6E-5	2E-7	-	-
	W, halides, nitrates, and metallic iridium	-	2E+5	6E-5	2E-7	-	-
	Y, oxides and hydroxides	-	1E+5	5E-5	2E-7	-	-
77 Iridium-184	D, see $^{182}\text{Ir}$	8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
	W, see $^{182}\text{Ir}$	-	3E+4	1E-5	5E-8	-	-
	Y, see $^{182}\text{Ir}$	-	3E+4	1E-5	4E-8	-	-
77 Iridium-185	D, see $^{182}\text{Ir}$	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
	W, see $^{182}\text{Ir}$	-	1E+4	5E-6	2E-8	-	-
	Y, see $^{182}\text{Ir}$	-	1E+4	4E-6	1E-8	-	-
77 Iridium-186	D, see $^{182}\text{Ir}$	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
	W, see $^{182}\text{Ir}$	-	6E+3	3E-6	9E-9	-	-
	Y, see $^{182}\text{Ir}$	-	6E+3	2E-6	8E-9	-	-
77 Iridium-187	D, see $^{182}\text{Ir}$	1E+4	3E+4	1E-5	5E-8	1E-4	1E-3
	W, see $^{182}\text{Ir}$	-	3E+4	1E-5	4E-8	-	-
	Y, see $^{182}\text{Ir}$	-	3E+4	1E-5	4E-8	-	-
77 Iridium-188	D, see $^{182}\text{Ir}$	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
	W, see $^{182}\text{Ir}$	-	4E+3	1E-6	5E-9	-	-
	Y, see $^{182}\text{Ir}$	-	3E+3	1E-6	5E-9	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
		LLI wall (5E+3)	DAC ( $\mu$ Ci/ml)				
77 Iridium-189	D, see $^{182}\text{Ir}$	5E+3	5E+3	2E-6	7E-9	-	-
		LLI wall (5E+3)	-	-	-	7E-5	7E-4
		W, see $^{182}\text{Ir}$	-	4E+3	2E-6	5E-9	-
77 Iridium-190m <sup>2</sup>	Y, see $^{182}\text{Ir}$	-	4E+3	1E-6	5E-9	-	-
		2E+5	2E+5	8E-5	3E-7	2E-3	2E-2
		W, see $^{182}\text{Ir}$	-	2E+5	9E-5	3E-7	-
77 Iridium-190	Y, see $^{182}\text{Ir}$	-	2E+5	8E-5	3E-7	-	-
		1E+3	9E+2	4E-7	1E-9	1E-5	1E-4
		W, see $^{182}\text{Ir}$	-	1E+3	4E-7	1E-9	-
77 Iridium-192m	Y, see $^{182}\text{Ir}$	-	9E+2	4E-7	1E-9	-	-
		3E+3	9E+1	4E-8	1E-10	4E-5	4E-4
		W, see $^{182}\text{Ir}$	-	2E+2	9E-8	3E-10	-
77 Iridium-192	Y, see $^{182}\text{Ir}$	-	2E+1	6E-9	2E-11	-	-
		9E+2	3E+2	1E-7	4E-10	1E-5	1E-4
		W, see $^{182}\text{Ir}$	-	4E+2	2E-7	6E-10	-
77 Iridium-194m	Y, see $^{182}\text{Ir}$	-	2E+2	9E-8	3E-10	-	-
		6E+2	9E+1	4E-8	1E-10	9E-6	9E-5
		W, see $^{182}\text{Ir}$	-	2E+2	7E-8	2E-10	-
77 Iridium-194	Y, see $^{182}\text{Ir}$	-	1E+2	4E-8	1E-10	-	-
		1E+3	3E+3	1E-6	4E-9	1E-5	1E-4
		W, see $^{182}\text{Ir}$	-	2E+3	9E-7	3E-9	-
77 Iridium-195m	Y, see $^{182}\text{Ir}$	-	2E+3	8E-7	3E-9	-	-
		8E+3	2E+4	1E-5	3E-8	1E-4	1E-3
		W, see $^{182}\text{Ir}$	-	3E+4	1E-5	4E-8	-
77 Iridium-195	Y, see $^{182}\text{Ir}$	-	2E+4	9E-6	3E-8	-	-
		1E+4	4E+4	2E-5	6E-8	2E-4	2E-3
		W, see $^{182}\text{Ir}$	-	5E+4	2E-5	7E-8	-
78 Platinum-186	Y, see $^{182}\text{Ir}$	-	4E+4	2E-5	6E-8	-	-
		D, all compounds	1E+4	4E+4	2E-5	5E-8	2E-4
		W, see $^{182}\text{Ir}$	-	6E+3	3E-6	8E-9	-
78 Platinum-188	D, all compounds	2E+3	2E+3	7E-7	2E-9	2E-5	2E-4
		W, see $^{182}\text{Ir}$	-	7E-7	2E-9	2E-5	2E-4
		1E+4	3E+4	1E-5	4E-8	1E-4	1E-3
78 Platinum-189	D, all compounds	4E+3	8E+3	4E-6	1E-8	5E-5	5E-4
		W, see $^{182}\text{Ir}$	-	8E+3	3E-6	8E-9	-
		3E+3	6E+3	3E-6	8E-9	-	-
78 Platinum-191	D, all compounds	LLI wall (3E+4)	-	-	-	4E-5	4E-4
		4E+3	2E+4	1E-5	3E-8	-	-
		LLI wall (5E+4)	-	-	-	6E-4	6E-3

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
78	Platinum-195m	D, all compounds	2E+3 LLI wall (2E+3)	4E+3	2E-6	6E-9	-
78	Platinum-197m <sup>2</sup>	D, all compounds	2E+4	4E+4	2E-5	6E-8	2E-4
78	Platinum-197	D, all compounds	3E+3	1E+4	4E-6	1E-8	4E-5
78	Platinum-199 <sup>2</sup>	D, all compounds	5E+4	1E+5	6E-5	2E-7	7E-4
78	Platinum-200	D, all compounds	1E+3	3E+3	1E-6	5E-9	2E-5
79	Gold-193	D, all compounds except those given for W and Y W, halides and nitrates Y, oxides and hydroxides	9E+3 - -	3E+4 2E+4 2E+4	1E-5 9E-6 8E-6	4E-8 3E-8 3E-8	1E-4 - -
79	Gold-194	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	3E+3 - -	8E+3 5E+3 5E+3	3E-6 2E-6 2E-6	1E-8 8E-9 7E-9	4E-5 - -
79	Gold-195	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	5E+3 - -	1E+4 1E+3 4E+2	5E-6 6E-7 2E-7	2E-8 2E-9 6E-10	7E-5 - -
79	Gold-198m	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	1E+3 - -	3E+3 1E+3 1E+3	1E-6 5E-7 5E-7	4E-9 2E-9 2E-9	1E-5 - -
79	Gold-198	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	1E+3 - -	4E+3 2E+3 2E+3	2E-6 8E-7 7E-7	5E-9 3E-9 2E-9	2E-5 - -
79	Gold-199	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	3E+3 - -	9E+3 4E+3 4E+3	4E-6 - 2E-6	1E-8 - 6E-9	- - -
79	Gold-200m	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	1E+3 - -	4E+3 3E+3 2E+4	1E-6 1E-6 1E-6	5E-9 4E-9 3E-9	2E-5 - -
79	Gold-200 <sup>2</sup>	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	3E+4 - -	6E+4 8E+4 7E+4	3E-5 3E-5 3E-5	9E-8 1E-7 1E-7	4E-4 - -
79	Gold-201 <sup>2</sup>	D, see <sup>193</sup> Au W, see <sup>193</sup> Au Y, see <sup>193</sup> Au	7E+4 (9E+4) - -	2E+5 - 2E+5 2E+5	9E-5 - 1E-4 9E-5	3E-7 - 3E-7 3E-7	- - - -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
				DAC ( $\mu$ Ci/ml)			
80 Mercury-193m	Vapor	-	8E+3	4E-6	1E-8	-	-
	Organic D	4E+3	1E+4	5E-6	2E-8	6E-5	6E-4
	D, sulfates	3E+3	9E+3	4E-6	1E-8	4E-5	4E-4
	W, oxides, hydroxides, halides, nitrates, and sulfides	-	8E+3	3E-6	1E-8	-	-
80 Mercury-193	Vapor	-	3E+4	1E-5	4E-8	-	-
	Organic D	2E+4	6E+4	3E-5	9E-8	3E-4	3E-3
	D, see $^{193m}\text{Hg}$	2E+4	4E+4	2E-5	6E-8	2E-4	2E-3
	W, see $^{193m}\text{Hg}$	-	4E+4	2E-5	6E-8	-	-
80 Mercury-194	Vapor	-	3E+1	1E-8	4E-11	-	-
	Organic D	2E+1	3E+1	1E-8	4E-11	2E-7	2E-6
	D, see $^{193m}\text{Hg}$	8E+2	4E+1	2E-8	6E-11	1E-5	1E-4
	W, see $^{193m}\text{Hg}$	-	1E+2	5E-8	2E-10	-	-
80 Mercury-195m	Vapor	-	4E+3	2E-6	6E-9	-	-
	Organic D	3E+3	6E+3	3E-6	8E-9	4E-5	4E-4
	D, see $^{193m}\text{Hg}$	2E+3	5E+3	2E-6	7E-9	3E-5	3E-4
	W, see $^{193m}\text{Hg}$	-	4E+3	2E-6	5E-9	-	-
80 Mercury-195	Vapor	-	3E+4	1E-5	4E-8	-	-
	Organic D	2E+4	5E+4	2E-5	6E-8	2E-4	2E-3
	D, see $^{193m}\text{Hg}$	1E+4	4E+4	1E-5	5E-8	2E-4	2E-3
	W, see $^{193m}\text{Hg}$	-	3E+4	1E-5	5E-8	-	-
80 Mercury-197m	Vapor	-	5E+3	2E-6	7E-9	-	-
	Organic D	4E+3	9E+3	4E-6	1E-8	5E-5	5E-4
	D, see $^{193m}\text{Hg}$	3E+3	7E+3	3E-6	1E-8	4E-5	4E-4
	W, see $^{193m}\text{Hg}$	-	5E+3	2E-6	7E-9	-	-
80 Mercury-197	Vapor	-	8E+3	4E-6	1E-8	-	-
	Organic D	7E+3	1E+4	6E-6	2E-8	9E-5	9E-4
	D, see $^{193m}\text{Hg}$	6E+3	1E+4	5E-6	2E-8	8E-5	8E-4
	W, see $^{193m}\text{Hg}$	-	9E+3	4E-6	1E-8	-	-
80 Mercury-199m <sup>2</sup>	Vapor	-	8E+4	3E-5	1E-7	-	-
	Organic D	6E+4	2E+5	7E-5	2E-7	-	-
	St wall	(1E+5)	-	-	-	1E-3	1E-2
	D, see $^{193m}\text{Hg}$	6E+4	1E+5	6E-5	2E-7	8E-4	8E-3
80 Mercury-203	Vapor	-	8E+2	4E-7	1E-9	-	-
	Organic D	5E+2	8E+2	3E-7	1E-9	7E-6	7E-5
	D, see $^{193m}\text{Hg}$	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
	W, see $^{193m}\text{Hg}$	-	1E+3	5E-7	2E-9	-	-
81 Thallium-194m <sup>2</sup>	D, all compounds	5E+4	2E+5	6E-5	2E-7	-	-
	St wall	(7E+4)	-	-	-	1E-3	1E-2

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
81 Thallium-194 <sup>2</sup>	D, all compounds	3E+5 St wall (3E+5)	6E+5	2E-4	8E-7	-	-
81 Thallium-195 <sup>2</sup>	D, all compounds	6E+4	1E+5	5E-5	2E-7	9E-4	9E-3
81 Thallium-197	D, all compounds	7E+4	1E+5	5E-5	2E-7	1E-3	1E-2
81 Thallium-198m <sup>2</sup>	D, all compounds	3E+4	5E+4	2E-5	8E-8	4E-4	4E-3
81 Thallium-198	D, all compounds	2E+4	3E+4	1E-5	5E-8	3E-4	3E-3
81 Thallium-199	D, all compounds	6E+4	8E+4	4E-5	1E-7	9E-4	9E-3
81 Thallium-200	D, all compounds	8E+3	1E+4	5E-6	2E-8	1E-4	1E-3
81 Thallium-201	D, all compounds	2E+4	2E+4	9E-6	3E-8	2E-4	2E-3
81 Thallium-202	D, all compounds	4E+3	5E+3	2E-6	7E-9	5E-5	5E-4
81 Thallium-204	D, all compounds	2E+3	2E+3	9E-7	3E-9	2E-5	2E-4
82 Lead-195m <sup>2</sup>	D, all compounds	6E+4	2E+5	8E-5	3E-7	8E-4	8E-3
82 Lead-198	D, all compounds	3E+4	6E+4	3E-5	9E-8	4E-4	4E-3
82 Lead-199 <sup>2</sup>	D, all compounds	2E+4	7E+4	3E-5	1E-7	3E-4	3E-3
82 Lead-200	D, all compounds	3E+3	6E+3	3E-6	9E-9	4E-5	4E-4
82 Lead-201	D, all compounds	7E+3	2E+4	8E-6	3E-8	1E-4	1E-3
82 Lead-202m	D, all compounds	9E+3	3E+4	1E-5	4E-8	1E-4	1E-3
82 Lead-202	D, all compounds	1E+2	5E+1	2E-8	7E-11	2E-6	2E-5
82 Lead-203	D, all compounds	5E+3	9E+3	4E-6	1E-8	7E-5	7E-4
82 Lead-205	D, all compounds	4E+3	1E+3	6E-7	2E-9	5E-5	5E-4
82 Lead-209	D, all compounds	2E+4	6E+4	2E-5	8E-8	3E-4	3E-3
82 Lead-210	D, all compounds	6E-1 Bone surf (1E+0)	2E-1 Bone surf (4E-1)	1E-10	-	-	-
82 Lead-211 <sup>2</sup>	D, all compounds	1E+4	6E+2	3E-7	9E-10	2E-4	2E-3
82 Lead-212	D, all compounds	8E+1 Bone surf (1E+2)	3E+1	1E-8	5E-11	-	-
82 Lead-214 <sup>2</sup>	D, all compounds	9E+3	8E+2	3E-7	1E-9	1E-4	1E-3
83 Bismuth-200 <sup>2</sup>	D, nitrates W, all other compounds	3E+4	8E+4	4E-5	1E-7	4E-4	4E-3
83 Bismuth-201 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+4	3E+4	1E-5	4E-8	2E-4	2E-3

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
				DAC ( $\mu$ Ci/ml)			
83 Bismuth-202 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+4 -	4E+4 8E+4	2E-5 3E-5	6E-8 1E-7	2E-4 -	2E-3 -
83 Bismuth-203	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	2E+3 -	7E+3 6E+3	3E-6 3E-6	9E-9 9E-9	3E-5 -	3E-4 -
83 Bismuth-205	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+3 -	3E+3 1E+3	1E-6 5E-7	3E-9 2E-9	2E-5 -	2E-4 -
83 Bismuth-206	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	6E+2 -	1E+3 9E+2	6E-7 4E-7	2E-9 1E-9	9E-6 -	9E-5 -
83 Bismuth-207	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	1E+3 -	2E+3 4E+2	7E-7 1E-7	2E-9 5E-10	1E-5 -	1E-4 -
83 Bismuth-210m	D, see <sup>200</sup> Bi  Kidneys (6E+1) W, see <sup>200</sup> Bi	4E+1 -	5E+0 7E-1	2E-9 3E-10	- 9E-12 9E-13	- 8E-7 -	- 8E-6 -
83 Bismuth-210	D, see <sup>200</sup> Bi  Kidneys (4E+2) W, see <sup>200</sup> Bi	8E+2 -	2E+2 3E+1	1E-7 1E-8	- 5E-10 4E-11	1E-5 -	1E-4 -
83 Bismuth-212 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	5E+3 -	2E+2 3E+2	1E-7 1E-7	3E-10 4E-10	7E-5 -	7E-4 -
83 Bismuth-213 <sup>2</sup>	D, see <sup>200</sup> Bi W, see <sup>200</sup> Bi	7E+3 -	3E+2 4E+2	1E-7 1E-7	4E-10 5E-10	1E-4 -	1E-3 -
83 Bismuth-214 <sup>2</sup>	D, see <sup>200</sup> Bi  St wall (2E+4) W, see <sup>200</sup> Bi	2E+4 -	8E+2 9E-2	3E-7 4E-7	1E-9 1E-9	- 3E-4	- 3E-3
84 Polonium-203 <sup>2</sup>	D, all compounds except those given for W W, oxides, hydroxides, and nitrates	3E+4 -	6E+4 9E+4	3E-5 4E-5	9E-8 1E-7	3E-4 -	3E-3 -
84 Polonium-205 <sup>2</sup>	D, see <sup>203</sup> Po W, see <sup>203</sup> Po	2E+4 -	4E+4 7E+4	2E-5 3E-5	5E-8 1E-7	3E-4 -	3E-3 -
84 Polonium-207	D, see <sup>203</sup> Po W, see <sup>203</sup> Po	8E+3 -	3E+4 3E+4	1E-5 1E-5	3E-8 4E-8	1E-4 -	1E-3 -
84 Polonium-210	D, see <sup>203</sup> Po W, see <sup>203</sup> Po	3E+0 -	6E-1 6E-1	3E-10 3E-10	9E-13 9E-13	4E-8 -	4E-7 -
85 Astatine-207 <sup>2</sup>	D, halides W	6E+3 -	3E+3 2E+3	1E-6 9E-7	4E-9 3E-9	8E-5 -	8E-4 -

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DACP ( $\mu$ Ci/ml)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
			INHALATION				Concentration ( $\mu$ Ci/ml)
85 Astatine-211	D, halides	1E+2	8E+1	3E-8	1E-10	2E-6	2E-5
	W	-	5E+1	2E-8	8E-11	-	-
86 Radon-220	With daughters removed	-	2E+4	7E-6	2E-8	-	-
	With daughters present	-	2E+1 (or 12 working level months)	9E-9 (or 1.0 working level)	3E-11	-	-
86 Radon-222	With daughters removed	-	1E+4	4E-6	1E-8	-	-
	With daughters present	-	1E+2 (or 4 working level months)	3E-8 (or 0.33 working level)	1E-10	-	-
87 Francium-222 <sup>2</sup>	D, all compounds	2E+3	5E+2	2E-7	6E-10	3E-5	3E-4
87 Francium-223 <sup>2</sup>	D, all compounds	6E+2	8E+2	3E-7	1E-9	8E-6	8E-5
88 Radium-223	W, all compounds	5E+0	7E-1	3E-10	9E-13	-	-
	Bone surf (9E+0)	-	-	-	-	1E-7	1E-6
88 Radium-224	W, all compounds	8E+0	2E+0	7E-10	2E-12	-	-
	Bone surf (2E+1)	-	-	-	-	2E-7	2E-6
88 Radium-225	W, all compounds	8E+0	7E-1	3E-10	9E-13	-	-
	Bone surf (2E+1)	-	-	-	-	2E-7	2E-6
88 Radium-226	W, all compounds	2E+0	6E-1	3E-10	9E-13	-	-
	Bone surf (5E+0)	-	-	-	-	6E-8	6E-7
88 Radium-227 <sup>2</sup>	W, all compounds	2E+4	1E+4	6E-6	-	-	-
	Bone surf (2E+4)	(2E+4)	-	-	3E-8	3E-4	3E-3
88 Radium-228	W, all compounds	2E+0	1E+0	5E-10	2E-12	-	-
	Bone surf (4E+0)	-	-	-	-	6E-8	6E-7

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)
		LLI wall (2E+3)	DAC ( $\mu$ Ci/ml)	Bone surf (4E+1)	-	5E-11	
89 Actinium-224	D, all compounds except those given for W and Y	2E+3 LLI wall (2E+3)	3E+1 Bone surf (4E+1)	1E-8 -	-	-	-
		W, halides and nitrates	-	5E+1	2E-8	7E-11	-
		Y, oxides and hydroxides	-	5E+1	2E-8	6E-11	-
89 Actinium-225	D, see $^{224}\text{Ac}$	5E+1 LLI wall (5E+1)	3E-1 Bone surf (5E-1)	1E-10 -	-	-	-
		W, see $^{224}\text{Ac}$	-	6E-1	3E-10	9E-13	-
		Y, see $^{224}\text{Ac}$	-	6E-1	3E-10	9E-13	-
89 Actinium-226	D, see $^{224}\text{Ac}$	1E+2 LLI wall (1E+2)	3E+0 Bone surf (4E+0)	1E-9 -	-	-	-
		W, see $^{224}\text{Ac}$	-	5E+0	2E-9	7E-12	-
		Y, see $^{224}\text{Ac}$	-	5E+0	2E-9	6E-12	-
89 Actinium-227	D, see $^{224}\text{Ac}$	2E-1 Bone surf (4E-1)	4E-4 Bone surf (8E-4)	2E-13 -	-	-	-
		W, see $^{224}\text{Ac}$	-	2E-3 Bone surf (3E-3)	7E-13 -	-	-
		Y, see $^{224}\text{Ac}$	-	4E-3	2E-12	6E-15	-
89 Actinium-228	D, see $^{224}\text{Ac}$	2E+3	9E+0 Bone surf (2E+1)	4E-9 -	-	3E-5	3E-4
		W, see $^{224}\text{Ac}$	-	4E+1 Bone surf (6E+1)	2E-8 -	-	-
		Y, see $^{224}\text{Ac}$	-	4E+1	2E-8	6E-11	-
90 Thorium-226 <sup>2</sup>	W, all compounds except those given for Y	5E+3 St wall (5E+3)	2E+2	6E-8	2E-10	-	-
		Y, oxides and hydroxides	-	1E+2	6E-8	2E-10	-
90 Thorium-227	W, see $^{226}\text{Th}$	1E+2	3E-1	1E-10	5E-13	2E-6	2E-5
		Y, see $^{226}\text{Th}$	-	3E-1	1E-10	5E-13	-
90 Thorium-228	W, see $^{226}\text{Th}$	6E+0 Bone surf (1E+1)	1E-2 Bone surf (2E-2)	4E-12 -	-	-	-
		Y, see $^{226}\text{Th}$	-	2E-2	7E-12	2E-14	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
		Bone surf (1E+0)	DAC ( $\mu$ Ci/ml)				Concentration ( $\mu$ Ci/ml)
90 Thorium-229	W, see $^{226}\text{Th}$	6E-1	9E-4	4E-13	-	-	-
		Bone surf (1E+0)	Bone surf (2E-3)	-	3E-15	2E-8	2E-7
	Y, see $^{226}\text{Th}$	-	2E-3	1E-12	-	-	-
		-	Bone surf (3E-3)	-	4E-15	-	-
90 Thorium-230	W, see $^{226}\text{Th}$	4E+0	6E-3	3E-12	-	-	-
		Bone surf (9E+0)	Bone surf (2E-2)	-	2E-14	1E-7	1E-6
	Y, see $^{226}\text{Th}$	-	2E-2	6E-12	-	-	-
		-	Bone surf (2E-2)	-	3E-14	-	-
90 Thorium-231	W, see $^{226}\text{Th}$	4E+3	6E+3	3E-6	9E-9	5E-5	5E-4
	Y, see $^{226}\text{Th}$	-	6E+3	3E-6	9E-9	-	-
90 Thorium-232	W, see $^{226}\text{Th}$	7E-1	1E-3	5E-13	-	-	-
		Bone surf (2E+0)	Bone surf (3E-3)	-	4E-15	3E-8	3E-7
	Y, see $^{226}\text{Th}$	-	3E-3	1E-12	-	-	-
		-	Bone surf (4E-3)	-	6E-15	-	-
90 Thorium-234	W, see $^{226}\text{Th}$	3E+2	2E+2	8E-8	3E-10	-	-
		LLI wall (4E+2)	-	-	-	5E-6	5E-5
	Y, see $^{226}\text{Th}$	-	2E+2	6E-8	2E-10	-	-
91 Protactinium-227 <sup>2</sup>	W, all compounds except those given for Y	4E+3	1E+2	5E-8	2E-10	5E-5	5E-4
	Y, oxides and hydroxides	-	1E+2	4E-8	1E-10	-	-
91 Protactinium-228	W, see $^{227}\text{Pa}$	1E+3	1E+1	5E-9	-	2E-5	2E-4
		Bone surf (2E+1)	-	-	3E-11	-	-
	Y, see $^{227}\text{Pa}$	-	1E+1	5E-9	2E-11	-	-
91 Protactinium-230	W, see $^{227}\text{Pa}$	6E+2	5E+0	2E-9	7E-12	-	-
		Bone surf (9E+2)	-	-	-	1E-5	1E-4
	Y, see $^{227}\text{Pa}$	-	4E+0	1E-9	5E-12	-	-
91 Protactinium-231	W, see $^{227}\text{Pa}$	2E-1	2E-3	6E-13	-	-	-
		Bone surf (5E-1)	Bone surf (4E-3)	-	6E-15	6E-9	6E-8
	Y, see $^{227}\text{Pa}$	-	4E-3	2E-12	-	-	-
		-	Bone surf (6E-3)	-	8E-15	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average Concentration ( $\mu$ Ci/ml)	
				DAC ( $\mu$ Ci/ml)				
91	Protactinium-232	W, see $^{227}\text{Pa}$	1E+3	2E+1 Bone surf (6E+1)	9E-9	-	2E-5	2E-4
		Y, see $^{227}\text{Pa}$	-	6E+1 Bone surf (7E+1)	2E-8	8E-11	-	-
91	Protactinium-233	W, see $^{227}\text{Pa}$	1E+3 LLI wall (2E+3)	7E+2	3E-7	1E-9	-	-
		Y, see $^{227}\text{Pa}$	-	6E+2	2E-7	8E-10	-	-
91	Protactinium-234	W, see $^{227}\text{Pa}$	2E+3	8E+3	3E-6	1E-8	3E-5	3E-4
		Y, see $^{227}\text{Pa}$	-	7E+3	3E-6	9E-9	-	-
92	Uranium-230	D, UF, UOF, UO(NO)	4E+0 Bone surf (6E+0)	4E-1 Bone surf (6E-1)	2E-10	-	-	-
		W, UO, UF, UCI	-	4E-1	1E-10	8E-13	8E-8	8E-7
		Y, UO, UO	-	3E-1	1E-10	4E-13	-	-
92	Uranium-231	D, see $^{230}\text{U}$	5E+3 LLI wall (4E+3)	8E+3	3E-6	1E-8	-	-
		W, see $^{230}\text{U}$	-	6E+3	2E-6	8E-9	-	-
		Y, see $^{230}\text{U}$	-	5E+3	2E-6	6E-9	-	-
92	Uranium-232	D, see $^{230}\text{U}$	2E+0 Bone surf (4E+0)	2E-1 Bone surf (4E-1)	9E-11	-	-	-
		W, see $^{230}\text{U}$	-	4E-1	2E-10	6E-13	6E-8	6E-7
		Y, see $^{230}\text{U}$	-	8E-3	3E-12	1E-14	-	-
92	Uranium-233	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
		W, see $^{230}\text{U}$	-	7E-1	3E-10	3E-12	3E-7	3E-6
		Y, see $^{230}\text{U}$	-	4E-2	2E-11	5E-14	-	-
92	Uranium-234 <sup>3</sup>	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
		W, see $^{230}\text{U}$	-	7E-1	3E-10	3E-12	3E-7	3E-6
		Y, see $^{230}\text{U}$	-	4E-2	2E-11	5E-14	-	-
92	Uranium-235 <sup>3</sup>	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	6E-10	-	-	-
		W, see $^{230}\text{U}$	-	8E-1	3E-10	3E-12	3E-7	3E-6
		Y, see $^{230}\text{U}$	-	4E-2	2E-11	6E-14	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION	Col. 1	Col. 2	Monthly Average
				DAC ( $\mu$ Ci/ml)	Air ( $\mu$ Ci/ml)	Water ( $\mu$ Ci/ml)	Concentration ( $\mu$ Ci/ml)
92 Uranium-236	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
	W, see $^{230}\text{U}$	-	8E-1	3E-10	1E-12	3E-7	3E-6
	Y, see $^{230}\text{U}$	-	4E-2	2E-11	6E-14	-	-
92 Uranium-237	D, see $^{230}\text{U}$	2E+3 LLI wall (2E+3)	3E+3	1E-6	4E-9	-	-
	W, see $^{230}\text{U}$	-	2E+3	7E-7	2E-9	-	-
	Y, see $^{230}\text{U}$	-	2E+3	6E-7	2E-9	-	-
92 Uranium-238 <sup>3</sup>	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	6E-10	-	-	-
	W, see $^{230}\text{U}$	-	8E-1	3E-10	1E-12	3E-7	3E-6
	Y, see $^{230}\text{U}$	-	4E-2	2E-11	6E-14	-	-
92 Uranium-239 <sup>2</sup>	D, see $^{230}\text{U}$	7E+4	2E+5	8E-5	3E-7	9E-4	9E-3
	W, see $^{230}\text{U}$	-	2E+5	7E-5	2E-7	-	-
	Y, see $^{230}\text{U}$	-	2E+5	6E-5	2E-7	-	-
92 Uranium-240	D, see $^{230}\text{U}$	1E+3	4E+3	2E-6	5E-9	2E-5	2E-4
	W, see $^{230}\text{U}$	-	3E+3	1E-6	4E-9	-	-
	Y, see $^{230}\text{U}$	-	2E+3	1E-6	3E-9	-	-
92 Uranium-natural <sup>3</sup>	D, see $^{230}\text{U}$	1E+1 Bone surf (2E+1)	1E+0 Bone surf (2E+0)	5E-10	-	-	-
	W, see $^{230}\text{U}$	-	8E-1	3E-10	9E-13	-	-
	Y, see $^{230}\text{U}$	-	5E-2	2E-11	9E-14	-	-
93 Neptunium-232 <sup>2</sup>	W, all compounds	1E+5	2E+3 Bone surf (5E+2)	7E-7	-	2E-3	2E-2
		-	(5E+2)	-	6E-9	-	-
93 Neptunium-233 <sup>2</sup>	W, all compounds	8E+5	3E+6	1E-3	4E-6	1E-2	1E-1
93 Neptunium-234	W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
93 Neptunium-235	W, all compounds	2E+4 LLI wall (2E+4)	8E+2 Bone surf (1E+3)	3E-7	-	-	-
		-	(1E+3)	-	2E-9	3E-4	3E-3
93 Neptunium-236 (1.15E+5 y)	W, all compounds	3E+0 Bone surf (6E+0)	2E-2 Bone surf (5E-2)	9E-12	-	-	-
		-	(5E-2)	-	8E-14	9E-8	9E-7
93 Neptunium-236 (22.5 h)	W, all compounds	3E+3 Bone surf (4E+3)	3E+1 Bone surf (7E+1)	1E-8	-	-	-
		-	(7E+1)	-	1E-10	5E-5	5E-4

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1	Col. 2	Col. 3	Col. 1	Col. 2	Monthly Average
		Oral Ingestion	INHALATION		Air ( $\mu\text{Ci}/\text{ml}$ )	Water ( $\mu\text{Ci}/\text{ml}$ )	
93	Neptunium-237	W, all compounds	5E-1 Bone surf (1E+0)	4E-3 Bone surf (1E-2)	2E-12 -	-	-
93	Neptunium-238	W, all compounds	1E+3 -	6E+1 (2E+2) Bone surf	3E-8 -	1E-14 2E-10	2E-8 -
93	Neptunium-239	W, all compounds	2E+3 LLI wall (2E+3)	2E+3 -	9E-7 -	3E-9 -	-
93	Neptunium-240 <sup>2</sup>	W, all compounds	2E+4	8E+4	3E-5	1E-7	3E-4
94	Plutonium-234	W, all compounds except PuO Y, PuO	8E+3 -	2E+2 2E+2	9E-8 8E-8	3E-10 3E-10	1E-4 -
94	Plutonium-235 <sup>2</sup>	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	9E+5 -	3E+6 3E+6	1E-3 1E-3	4E-6 3E-6	1E-2 -
94	Plutonium-236	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	2E+0 Bone surf (4E+0)	2E-2 Bone surf (4E-2)	8E-12 -	-	-
94	Plutonium-237	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	1E+4 -	3E+3 3E+3	1E-6 1E-6	5E-9 4E-9	2E-4 -
94	Plutonium-238	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	9E-1 Bone surf (2E+0)	7E-3 Bone surf (1E-2)	3E-12 -	-	-
94	Plutonium-239	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 -	-	-
94	Plutonium-240	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12 -	-	-
94	Plutonium-241	W, see <sup>234</sup> Pu Y, see <sup>234</sup> Pu	4E+1 Bone surf (7E+1)	3E-1 Bone surf (6E-1)	1E-10 -	-	-
			-	2E-2 Bone surf (2E-2)	7E-12 -	-	-
			-	(2E-2)	-	2E-14	-
			-	(1E+0)	-	1E-12	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
		Bone surf (1E+0)	DAC ( $\mu$ Ci/ml)				Concentration ( $\mu$ Ci/ml)
94 Plutonium-242	W, see $^{234}\text{Pu}$	8E-1	7E-3	3E-12	-	-	-
		Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
		-	2E-2	7E-12	-	-	-
94 Plutonium-243	W, see $^{234}\text{Pu}$ Y, see $^{234}\text{Pu}$	2E+4	4E+4	2E-5	5E-8	2E-4	2E-3
		-	4E+4	2E-5	5E-8	-	-
		8E-1	7E-3	3E-12	-	-	-
94 Plutonium-244	W, see $^{234}\text{Pu}$ Y, see $^{234}\text{Pu}$	Bone surf (2E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
		-	2E-2	7E-12	-	-	-
		-	(2E-2)	-	2E-14	-	-
94 Plutonium-245	W, see $^{234}\text{Pu}$ Y, see $^{234}\text{Pu}$	2E+3	5E+3	2E-6	6E-9	3E-5	3E-4
		-	4E+3	2E-6	6E-9	-	-
94 Plutonium-246	W, see $^{234}\text{Pu}$ Y, see $^{234}\text{Pu}$	4E+2	3E+2	1E-7	4E-10	-	-
		LLI wall (4E+2)	-	-	-	6E-6	6E-5
		-	3E+2	1E-7	4E-10	-	-
95 Americium-237 <sup>2</sup>	W, all compounds	8E+4	3E+5	1E-4	4E-7	1E-3	1E-2
95 Americium-238 <sup>2</sup>	W, all compounds	4E+4	3E+3	1E-6	-	5E-4	5E-3
		-	Bone surf (6E+3)	-	9E-9	-	-
95 Americium-239	W, all compounds	5E+3	1E+4	5E-6	2E-8	7E-5	7E-4
95 Americium-240	W, all compounds	2E+3	3E+3	1E-6	4E-9	3E-5	3E-4
95 Americium-241	W, all compounds	8E-1	6E-3	3E-12	-	-	-
		Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
		-	-	-	-	-	-
95 Americium-242m	W, all compounds	8E-1	6E-3	3E-12	-	-	-
		Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
		-	-	-	-	-	-
95 Americium-242	W, all compounds	4E+3	8E+1	4E-8	-	5E-5	5E-4
		-	Bone surf (9E+1)	-	1E-10	-	-
95 Americium-243	W, all compounds	8E-1	6E-3	3E-12	-	-	-
		Bone surf (1E+0)	Bone surf (1E-2)	-	2E-14	2E-8	2E-7
95 Americium-244m <sup>2</sup>	W, all compounds	6E+4	4E+3	2E-6	-	-	-
		St wall (8E+4)	Bone surf (7E+3)	-	1E-8	1E-3	1E-2

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION DAC ( $\mu$ Ci/ml)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average	
95	Americium-244	W, all compounds	3E+3	2E+2 Bone surf (3E+2)	8E-8	-	4E-5	4E-4
			-	-	-	4E-10	-	-
95	Americium-245	W, all compounds	3E+4	8E+4	3E-5	1E-7	4E-4	4E-3
95	Americium-246m <sup>2</sup>	W, all compounds	5E+4 St wall (6E+4)	2E+5	8E-5	3E-7	-	-
95	Americium-246 <sup>2</sup>	W, all compounds	3E+4	1E+5	4E-5	1E-7	4E-4	4E-3
96	Curium-238	W, all compounds	2E+4	1E+3	5E-7	2E-9	2E-4	2E-3
96	Curium-240	W, all compounds	6E+1 Bone surf (8E+1)	6E-1 Bone surf (6E-1)	2E-10	-	-	-
96	Curium-241	W, all compounds	1E+3	3E+1 Bone surf (4E+1)	1E-8	-	2E-5	2E-4
96	Curium-242	W, all compounds	3E+1 Bone surf (5E+1)	3E-1 Bone surf (3E-1)	1E-10	-	-	-
96	Curium-243	W, all compounds	1E+0 Bone surf (2E+0)	9E-3 Bone surf (2E-2)	4E-12	-	-	-
96	Curium-244	W, all compounds	1E+0 Bone surf (3E+0)	1E-2 Bone surf (2E-2)	5E-12	-	-	-
96	Curium-245	W, all compounds	7E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
96	Curium-246	W, all compounds	7E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
96	Curium-247	W, all compounds	8E-1 Bone surf (1E+0)	6E-3 Bone surf (1E-2)	3E-12	-	-	-
96	Curium-248	W, all compounds	2E-1 Bone surf (4E-1)	2E-3 Bone surf (3E-3)	7E-13	-	-	-
96	Curium-249 <sup>2</sup>	W, all compounds	5E+4	2E+4 Bone surf (3E+4)	7E-6	-	7E-4	7E-3
96	Curium-250	W, all compounds	4E-2 Bone surf (6E-2)	3E-4 Bone surf (5E-4)	1E-13	-	-	-
						8E-16	9E-10	9E-9

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 INHALATION ALI ( $\mu$ Ci)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average	
			DAC ( $\mu$ Ci/ml)				Concentration ( $\mu$ Ci/ml)	
97	Berkelium-245	W, all compounds	2E+3	1E+3	5E-7	2E-9	3E-5	3E-4
97	Berkelium-246	W, all compounds	3E+3	3E+3	1E-6	4E-9	4E-5	4E-4
97	Berkelium-247	W, all compounds	5E-1 (1E+0)	4E-3 (9E-3)	2E-12	-	-	-
97	Berkelium-249	W, all compounds	2E+2 (5E+2)	2E+0 (4E+0)	7E-10	-	-	-
97	Berkelium-250	W, all compounds	9E+3 -	3E+2 (7E+2)	1E-7	-	1E-4	1E-3
98	Californium-244 <sup>2</sup>	W, all compounds except those given for Y	3E+4 (3E+4)	6E+2 -	2E-7	8E-10	-	-
		Y, oxides and hydroxides	-	6E+2	2E-7	8E-10	-	-
98	Californium-246	W, see <sup>244</sup> Cf	4E+2	9E+0	4E-9	1E-11	5E-6	5E-5
		Y, see <sup>244</sup> Cf	-	9E+0	4E-9	1E-11	-	-
98	Californium-248	W, see <sup>244</sup> Cf	8E+0 (2E+1)	6E-2 (1E-1)	3E-11	-	-	-
		Y, see <sup>244</sup> Cf	-	1E-1	4E-11	1E-13	-	-
98	Californium-249	W, see <sup>244</sup> Cf	5E-1 (1E+0)	4E-3 (9E-3)	2E-12	-	-	-
		Y, see <sup>244</sup> Cf	-	1E-2	4E-12	-	-	-
			-	(1E-2)	-	2E-14	-	-
98	Californium-250	W, see <sup>244</sup> Cf	1E+0 (2E+0)	9E-3 (2E-2)	4E-12	-	-	-
		Y, see <sup>244</sup> Cf	-	3E-2	1E-11	4E-14	-	-
98	Californium-251	W, see <sup>244</sup> Cf	5E-1 (1E+0)	4E-3 (9E-3)	2E-12	-	-	-
		Y, see <sup>244</sup> Cf	-	1E-2	4E-12	-	-	-
			-	(1E-2)	-	2E-14	-	-
98	Californium-252	W, see <sup>244</sup> Cf	2E+0 (5E+0)	2E-2 (4E-2)	8E-12	-	-	-
		Y, see <sup>244</sup> Cf	-	3E-2	1E-11	5E-14	7E-8	7E-7

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu$ Ci)	Col. 3 DAC ( $\mu$ Ci/ml)	Col. 1 Air ( $\mu$ Ci/ml)	Col. 2 Water ( $\mu$ Ci/ml)	Monthly Average
		INHALATION					
98	Californium-253	W, see $^{244}\text{Cf}$	2E+2 Bone surf (4E+2)	2E+0	8E-10	3E-12	-
		Y, see $^{244}\text{Cf}$	-	2E+0	7E-10	2E-12	5E-6
98	Californium-254	W, see $^{244}\text{Cf}$	2E+0	2E-2	9E-12	3E-14	3E-8
		Y, see $^{244}\text{Cf}$	-	2E-2	7E-12	2E-14	-
99	Einsteinium-250	W, all compounds	4E+4 Bone surf (1E+3)	5E+2	2E-7	-	6E-4
			-	2E-9	-	-	-
99	Einsteinium-251	W, all compounds	7E+3 Bone surf (1E+3)	9E+2	4E-7	-	1E-4
			-	-	2E-9	-	-
99	Einsteinium-253	W, all compounds	2E+2	1E+0	6E-10	2E-12	2E-6
99	Einsteinium-254m	W, all compounds	3E+2 LLI wall (3E+2)	1E+1	4E-9	1E-11	-
99	Einsteinium-254	W, all compounds	8E+0 Bone surf (2E+1)	7E-2 Bone surf (1E-1)	3E-11	-	-
			-	-	2E-13	2E-7	2E-6
100	Fermium-252	W, all compounds	5E+2	1E+1	5E-9	2E-11	6E-6
100	Fermium-253	W, all compounds	1E+3	1E+1	4E-9	1E-11	1E-5
100	Fermium-254	W, all compounds	3E+3	9E+1	4E-8	1E-10	4E-5
100	Fermium-255	W, all compounds	5E+2	2E+1	9E-9	3E-11	7E-6
100	Fermium-257	W, all compounds	2E+1 Bone surf (4E+1)	2E-1 Bone surf (2E-1)	7E-11	-	-
			-	-	3E-13	5E-7	5E-6
101	Mendelevium-257	W, all compounds	7E+3 Bone surf (9E+1)	8E+1	4E-8	-	1E-4
			-	-	1E-10	-	-
101	Mendelevium-258	W, all compounds	3E+1 Bone surf (5E+1)	2E-1 Bone surf (3E-1)	1E-10	-	-
			-	-	5E-13	6E-7	6E-6

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 INHALATION ALI ( $\mu\text{Ci}$ )	Col. 1 Air ( $\mu\text{Ci}/\text{ml}$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average
				DAC ( $\mu\text{Ci}/\text{ml}$ )			Concentration ( $\mu\text{Ci}/\text{ml}$ )
- Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life less than 2 hours	Submersion <sup>1</sup>	-	2E+2	1E-7	1E-9	-	-
- Any single radionuclide not listed above with decay mode other than alpha emission or spontaneous fission and with radioactive half-life greater than 2 hours		-	2E-1	1E-10	1E-12	1E-8	1E-7
- Any single radionuclide not listed above that decays by alpha emission or spontaneous fission, or any mixture for which either the identity or the concentration of any radionuclide in the mixture is not known		-	4E-4	2E-13	1E-15	2E-9	2E-8

## FOOTNOTES:

<sup>1</sup>"Submersion" means that values given are for submersion in a hemispherical semi-infinite cloud of airborne material.

<sup>2</sup>These radionuclides have radiological half-lives of less than 2 hours. The total effective dose equivalent received during operations with these radionuclides might include a significant contribution from external exposure. The DAC values for all radionuclides, other than those designated Class "Submersion," are based upon the committed effective dose equivalent due to the intake of the radionuclide into the body and do NOT include potentially significant contributions to dose equivalent from external exposures. The licensee may substitute 1E-7  $\mu\text{Ci}/\text{ml}$  for the listed DAC to account for the submersion dose prospectively, but should use individual monitoring devices or other radiation measuring instruments that measure external exposure to demonstrate compliance with the limits. (see 40.17)

<sup>3</sup>For soluble mixtures of U-238, U-234, and U-235 in air, chemical toxicity may be the limiting factor (see 40.15(5)). If the percent by weight (enrichment) of U-235 is not greater than 5, the concentration value for a 40-hour workweek is 0.2 milligrams uranium per cubic meter of air average. For any enrichment, the product of the average concentration and time of exposure during a 40-hour workweek shall not exceed 8E-3 (SA)  $\mu\text{Ci}\cdot\text{hr}/\text{ml}$ , where SA is the specific activity of the uranium inhaled. The specific activity for natural uranium is 6.77E-7 curies per gram U. The specific activity for other mixtures of U-238, U-235, and U-234, if not known, shall be:

$$\text{SA} = 3.6\text{E-}7 \text{ curies/gram U} \quad \text{U-depleted}$$

$$\text{SA} = [0.4 + 0.38 (\text{enrichment}) + 0.0034 (\text{enrichment})^2] \text{ E-}6, \text{ enrichment} \geq 0.72$$

where enrichment is the percentage by weight of U-235, expressed as percent.

## NOTE:

- If the identity of each radionuclide in a mixture is known but the concentration of one or more of the radionuclides in the mixture is not known, the DAC for the mixture shall be the most restrictive DAC of any radionuclide in the mixture.

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers	
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 INHALATION DAC ( $\mu\text{Ci}/\text{ml}$ )	Col. 1 Air ( $\mu\text{Ci}/\text{ml}$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average	
							Concentration ( $\mu\text{Ci}/\text{ml}$ )	
2. If the identity of each radionuclide in the mixture is not known, but it is known that certain radionuclides specified in this appendix are not present in the mixture, the inhalation ALI, DAC, and effluent and sewage concentrations for the mixture are the lowest values specified in this appendix for any radionuclide that is not known to be absent from the mixture; or								
If it is known that Ac-227-D and Cm-250-W are not present		-		7E-4	3E-13	-	-	-
If, in addition, it is known that Ac-227-W,Y, Th-229-W,Y, Th-230-W, Th-232-W,Y, Pa-231-W,Y, Np-237-W, Pu-239-W, Pu-240-W, Pu-242-W, Am-241-W, Am-242m-W, Am-243-W, Cm-245-W, Cm-246-W, Cm-247-W, Cm-248-W, Bk-247-W, Cf-249-W, and Cf-251-W are not present		-		7E-3	3E-12	-	-	-
If, in addition, it is known that Sm-146-W, Sm-147-W, Gd-148-D,W, Gd-152-D,W, Th-228-W,Y, Th-230-Y, U-232-Y, U-233-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, Np-236-W, Pu-236-W,Y, Pu-238-W,Y, Pu-239-Y, Pu-240-Y, Pu-242-Y, Pu-244-W,Y, Cm-243-W, Cm-244-W, Cf-248-W, Cf-249-Y, Cf-250-W,Y, Cf-251-Y, Cf-252-W,Y, and Cf-254-W,Y are not present		-		7E-2	3E-11	-	-	-
If, in addition, it is known that Pb-210-D, Bi-210m-W, Po-210-D,W, Ra-223-W, Ra-225-W, Ra-226-W, Ac-225-D,W,Y, Th-227-W,Y, U-230-D,W,Y, U-232-D,W, Pu-241-W, Cm-240-W, Cm-242-W, Cf-248-Y, Es-254-W, Fm-257-W, and Md-258-W are not present		-		7E-1	3E-10	-	-	-

Atomic Radio-nuclide No.	Class	Table I Occupational Values			Table II Effluent Concentrations		Table III Releases to Sewers
		Col. 1 Oral Ingestion	Col. 2 ALI ( $\mu\text{Ci}$ )	Col. 3 INHALATION ALI ( $\mu\text{Ci}$ )	Col. 1 Air ( $\mu\text{Ci}/\text{ml}$ )	Col. 2 Water ( $\mu\text{Ci}/\text{ml}$ )	Monthly Average
				DAC ( $\mu\text{Ci}/\text{ml}$ )			Concentration ( $\mu\text{Ci}/\text{ml}$ )
If, in addition, it is known that Si-32-Y, Ti-44-Y, Fe-60-D, Sr-90-Y, Zr-93-D, Cd-113m-D, Cd-113-D, In-115-D,W, La-138-D, Lu-176-W, Hf-178m-D,W, Hf-182-D,W, Bi-210m-D, Ra-224-W, Ra-228-W, Ac-226-D,W,Y, Pa-230-W,Y, U-233-D,W, U-234-D,W, U-235-D, W, U-236-D,W, U-238-D,W, Pu-241-Y, Bk-249-W, Cf-253-W,Y, and Es-253-W are not present		-		7E+0	3E-9	-	-
If it is known that Ac-227-D,W,Y, Th-229-W,Y, Th-232-W,Y, Pa-231-W, Y, Cm-248-W, and Cm-250-W are not present		-	-	-	-	1E-14	-
If, in addition, it is known that Sm-146-W, Gd-148-D,W, Gd-152-D, Th-228-W,Y, Th-230-W,Y, U-232-Y, U-233-Y, U-234-Y, U-235-Y, U-236-Y, U-238-Y, U-Nat-Y, Np-236-W, Np-237-W, Pu-236-W,Y, Pu-238-W,Y, Pu-239-W,Y, Pu-240-W,Y, Pu-242-W,Y, Pu-244-W,Y, Am-241-W, Am-242m-W, Am-243-W, Cm-243-W, Cm-244-W, Cm-245-W, Cm-246-W, Cm-247-W, Bk-247-W, Cf-249-W,Y, Cf-250-W,Y, Cf-251-W,Y, Cf-252-W,Y, and Cf-254-W,Y are not present		-	-	-	1E-13	-	
If, in addition, it is known that Sm-147-W, Gd-152-W, Pb-210-D, Bi-210m-W, Po-210-D,W, Ra-223-W, Ra-225-W, Ra-226-W, Ac-225-D, W,Y, Th-227-W,Y, U-230-D,W,Y, U-232-D,W, U-Nat-W, Pu-241-W, Cm-240-W, Cm-242-W, Cf-248-W,Y, Es-254-W, Fm-257-W, and Md-258-W are not present		-	-	-	-	1E-12	-
If, in addition it is known that Fe-60, Sr-90, Cd-113m, Cd-113, In-115, I-129, Cs-134, Sm-145, Sm-147,							

Gd-148, Gd-152, Hg-194 (organic),  
Bi-210m, Ra-223, Ra-224, Ra-225,  
Ac-225, Th-228, Th-230, U-233,  
U-234, U-235, U-236, U-238,  
U-Nat, Cm-242, Cf-248, Es-254,  
Fm-257, and Md-258 are  
not present

- - - - - 1E-6 1E-5

3. If a mixture of radionuclides consists of uranium and its daughters in ore dust ( $10 \mu\text{m}$  AMAD particle distribution assumed) prior to chemical separation of the uranium from the ore, the following values may be used for the DAC of the mixture:  $6\text{E-}11 \mu\text{Ci}$  of gross alpha activity from uranium-238, uranium-234, thorium-230, and radium-226 per milliliter of air;  $3\text{E-}11 \mu\text{Ci}$  of natural uranium per milliliter of air; or 45 micrograms of natural uranium per cubic meter of air.

4. If the identity and concentration of each radionuclide in a mixture are known, the limiting values should be derived as follows: determine, for each radionuclide in the mixture, the ratio between the concentration present in the mixture and the concentration otherwise established in Appendix B, Chapter 40 for the specific radionuclide when not in a mixture. The sum of such ratios for all of the radionuclides in the mixture may not exceed "1" (i.e., "unity").